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ABSTRACT

Amendments to H.R. 1310 (Elementary Mathematics and Science Education Act) and to the National Defense Education Act of 1958 are presented. Also presented is a summary of H.R. 1310, highlighting: elementary and secondary programs; postsecondary programs; background/need for the legislation; student preparation and achievement; foreign languages; underrepresentation of women and minorities; other needs in mathematics/science education; needs of industry and defense; and need for federal legislation. In addition, major provisions of the bill are presented, focusing on: part A (elementary and secondary programs)- authorizations, funds distribution, state/local shares, local/state use of funds, and general provisions; part B (postsecondary programs)- authorizations, National Teaching Scholarships, curriculum improvement and faculty development at institutions of higher education, summer institutes, and research; and part C (teacher initiative grants). Also included are costs estimates, a section-by-section analysis, general provisions of the National Defense Education Act, and additional and dissenting views of H.R. 1310. (JN)

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98TH CONGRESS
1st Session

HOUSE OF REPRESENTATIVES

REPT. 98-6
Part 1

ED237336

EMERGENCY MATHEMATICS AND SCIENCE EDUCATION ACT

FEBRUARY 17, 1983.—Ordered to be printed

Mr. PERKINS, from the Committee on Education and Labor, submitted the following

REPORT

together with

ADDITIONAL AND DISSENTING VIEWS

[To accompany H.R. 1310 which on February 8, 1983, was referred jointly to the Committee on Education and Labor and the Committee on Science and Technology]

[Including cost estimate of the Congressional Budget Office]

The Committee on Education and Labor, to whom was referred the bill (H.R. 1310) to provide assistance to improve elementary, secondary, and postsecondary education in mathematics and science; to provide a national policy for engineering, technical, and scientific personnel; to provide for cost-sharing by the private sector in training such personnel; and for other purposes, having considered the same, report favorably thereon with an amendment and recommend that the bill as amended do pass.

The amendment is as follows:

Page 2, strike out line 3 and all that follows through page 12, line 18, and insert in lieu thereof the following:

TITLE I—EMERGENCY MATHEMATICS AND SCIENCE EDUCATION ASSISTANCE

SHORT TITLE

SECTION 101. This title may be cited as the "Emergency Mathematics and Science Education Act".

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AMENDMENTS TO THE NATIONAL DEFENSE EDUCATION ACT OF 1958

SEC. 102. (a) The National Defense Education Act of 1958 is amended by adding the following new title:

"TITLE VI—EMERGENCY MATHEMATICS AND SCIENCE EDUCATION

"PART A—ELEMENTARY AND SECONDARY ASSISTANCE

"FINDINGS

"SEC. 601. The Congress finds that in order to enhance our Nation's economic productivity and ensure an adequate number of skilled individuals to meet our national defense needs, it is necessary (1) to improve the quality of instruction and levels of student achievement in mathematics and science at the elementary and secondary education levels, and (2) to increase the supply and strengthen the qualifications of teachers of mathematics and science at the elementary and secondary education levels.

"AUTHORIZATION OF APPROPRIATIONS TO THE DEPARTMENT OF EDUCATION

"SEC. 602. (a) There are authorized to be appropriated to the Department of Education to carry out this part $250,000,000, for fiscal year 1984, and such sums as may be necessary for fiscal year 1985.

"(b) No funds are authorized to be appropriated to carry out this part for any fiscal year if the amount appropriated to carry out chapter 1 of the Education Consolidation and Improvement Act of 1981 for such fiscal year does not equal or exceed the amount appropriated to carry out such chapter for the preceding fiscal year.

"ALLOCATION OF FUNDS

"SEC. 603. (a)(1) From the amount appropriated under section 602 for any fiscal year, the Secretary shall reserve—

"(A) one percent for allocation among Guam, the Virgin Islands, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands in proportion to their allocations under chapter 1 of the Education Consolidation and Improvement Act of 1981; and

"(B) one-half of one percent for payment to the Secretary of the Interior for use in Bureau of Indian Affairs schools for programs consistent with the purposes of this part.

"(2) The remainder of the amount so appropriated (after meeting the requirements of paragraph (1)) shall be allocated among the States (treating the District of Columbia and Puerto Rico as States) as follows:

"(A) One-half of such remainder shall be allocated among the States in the same manner as is required by the second sentence of section 302(a)(1) of this Act.

"(B) One-half of such remainder shall be allocated among the States by allocating to each State an amount which bears the same ratio to that one-half of such remainder as—

"(i) the product of the school-age population of such State, multiplied by a fraction equal to (I) the per pupil expenditure amount determined under the second sentence of section 111(a)(2)(A), or under section 111(a)(2)(C), of the Elementary and Secondary Education Act of 1965 with respect to such State, divided by (II) the average per pupil expenditure in the United States as determined under section 198(a)(2) of such Act, bears to

"(ii) the sum of such products for all the States.

"(b)(1) From the amount allocated to any State pursuant to subsection (a) the State educational agency may reserve not more than 25 percent of such amount for the conduct of State programs, planning, and administration pursuant to section 605.

"(2) The remainder of the amount allocated to any State pursuant to subsection (a) which is not reserved under paragraph (1) shall be allocated by the State educational agency among the local educational agencies in that State in proportion to their most recent allocations under chapter 1 of the Education Consolidation and Improvement Act of 1981.

"USE OF FUNDS BY LOCAL EDUCATIONAL AGENCIES; APPLICATION

"SEC. 604. (a) Funds made available to any local educational agency pursuant to this part shall be used, in accordance with a local application certified to meet the requirements of subsection (c) by the State educational agency—

"(1) first, to assess the needs for improvement of mathematics and science education in the school district of that local educational agency, including the needs of traditionally underrepresented groups, to determine methods for meeting those needs, and to provide services to aid school administrators and school board members in assessing those needs;

"(2) upon completion of activities under paragraph (1), for (A) in-service training (i) to improve teacher knowledge of and teaching skills in mathematics, science, and their applications, (ii) to train school principals for the supervision of course offerings in mathematics, science, and their applications, and (iii) to recertify teachers of other subjects as mathematics and science teachers; and (B) payment of expenses related to teachers attending (i) State-operated teacher training programs in mathematics and science, including programs under section 605, and (ii) summer institutes funded under section 624 of this title; and

"(3) after meeting the needs of teachers in the school district of the local educational agency for the programs described in paragraph (2), for any other activity to modernize, expand, or improve instructional programs in mathematics and science in the school district of that agency.

"(b) In meeting the needs of teachers for programs described in paragraph (2) of subsection (a) and in carrying out activities under paragraph (3) of such subsection, local educational agencies shall give thorough consideration to the establishment of such programs and activities in conjunction with other such agencies, the State educational agency, educational service agencies, area vocational

education schools, and institutions of higher education. Such agencies are also authorized to establish such programs and activities in conjunction with private business enterprise, museums, libraries, and other public and private organizations and agencies.

"(c) The application to the State educational agency required by subsection (a) shall consist of (1) an assurance that the local educational agency will comply with applicable Federal audit requirements, and (2) satisfactory information to ensure that the local educational agency will use the funds received hereunder in a manner consistent with the purposes of this part and in accordance with section 607.

"(d) All in-service teacher training provided under this section shall be in programs which meet any mandatory State standards for teacher training, retraining, and professional development.

"STATE USE OF FUNDS; STATE PLAN

"SEC. 605 (a)(1) Funds made available to any State educational agency under section 603(b)(1) shall, in accordance with a State plan certified to meet the requirements of this part (including section 607) by the Secretary, be used (A) for programs described in subsection (b) or (c), or (B) for other programs to meet State priorities for modernizing, expanding, and improving mathematics and science education in the State.

"(2) Such programs may be operated directly by such agency or under grants to or contracts with local educational agencies and institutions of higher education. Such funds may be used for programs described in clause (B) of paragraph (1) only after the need in such State for programs described in clause (A) of such paragraph has been met.

"(3) Such funds may be made available as grants to local educational agencies in accordance with criteria established by the State educational agency which emphasize assisting school districts with special needs. Such grants may include grants for—

"(A) cooperative programs developed by rural school districts to maximize in-service training efforts within rural regions or States, develop mathematics and science curricula that take into consideration the special needs of rural regions or rural States, and facilitate cooperative efforts of rural school districts with institutions of higher education and other public or private nonprofit organizations to enhance service delivery; and

"(B) efforts to increase the representation of typically underrepresented groups.

"(b)(1) Funds allocated to a State educational agency pursuant to section 603(b)(1) may be used for—

"(A) in-service training (i) to improve teacher knowledge of and teaching skills in mathematics, science, and their applications, (ii) to train school principals for the supervision of course offerings in mathematics, science, and their applications, (iii) to recertify teachers of other subjects as mathematics and science teachers;

"(B) payment of expenses related to teachers attending summer institutes funded under section 624 of this title.

"(2) In carrying out activities under paragraph (1)(A), the State educational agency shall give thorough consideration to the establishment of such activities in conjunction with local educational agencies, educational service agencies, area vocational education schools, and institutions of higher education.

"(c)(1) At least 20 percent of the funds allocated to a State educational agency pursuant to section 603(b)(1) shall be used for making grants to provide not more than one-half the cost of joint programs to improve mathematics and science education. Such programs shall be operated by local educational agencies in conjunction with private business enterprises, institutions of higher education, museums, libraries, or other public or nonprofit private organizations and agencies. Private sector personnel shall be under the supervision of State certified teachers when instructing students in the school classroom. Such programs may include—

"(A) training of teachers in programs operated by the private sector;

"(B) use of private sector personnel (i) to donate time in elementary and secondary schools for improvement of mathematics and science education and (ii) to train teachers in mathematics and science;

"(C) sharing of equipment and facilities;

"(D) on-site mathematics and science instruction at private sector facilities; and

"(E) improving the skills of teachers while employed in summer jobs.

"(2) Funds available under chapter 2 of the Education Consolidation and Improvement Act of 1981 may be used to meet the other one-half of the cost of a program under this subsection, but no other Federal funds may be used to meet that requirement.

"(d) Not more than 12 percent of the funds available under section 603(b)(1) may be used by the State educational agency for the cost of administration of programs under this part.

"REQUIREMENT TO SUPPLEMENT NOT SUPPLANT

"SEC. 606. A State or local educational agency may use funds received under this part only so as to supplement and, to the extent practicable, increase the level of funds that would, in the absence of funds received under this part, be made available from non-Federal sources for programs and activities assisted under this part.

"PARTICIPATION REQUIREMENT

"SEC. 607. Each State and local educational agency shall take appropriate steps to ensure equal educational opportunity and the full participation of traditionally underrepresented groups, including women and racial and ethnic minorities, in assessment, planning, in-service training, joint programs, and other programs assisted with funds made available under this part.

"PARTICIPATION OF CHILDREN AND TEACHERS FROM PRIVATE SCHOOLS

"SEC. 608. (a) To the extent consistent with the number of children in the State or in the school district of each local educational

agency who are enrolled in private elementary and secondary schools, such State or agency shall, after consultation with appropriate private school representatives, make provision for including special educational services and arrangements (such as dual enrollment, educational radio and television, and mobile educational services and equipment) in which such children can participate and which meet the requirements of this part. Expenditures for educational services and arrangements pursuant to this subsection for children in private schools shall be equal (taking into account the number of children to be served and the needs of such children) to expenditures for children enrolled in the public schools of the State or local educational agency.

"(b) To the extent consistent with the number of children in the State or in the school district of a local educational agency who are enrolled in private elementary and secondary schools, such State or agency after consultation with appropriate private school representatives shall make provision for including teachers from such schools in programs and activities conducted with funds available under this part. Expenditures for such teachers shall be equal (taking into account the number of children served by such private schools) to expenditures for teachers in the public schools of the State or local educational agency.

"(c) If by reason of any provision of law a State or local educational agency is prohibited from providing for the participation of children or teachers from private schools as required by subsections (a) and (b), or if the Secretary determines that a State or local educational agency has substantially failed or is unwilling to provide for such participation on an equitable basis, the Secretary shall waive such requirements and shall arrange for the provision of services to such children or teachers which shall be subject to the requirements of this section. Such waivers shall be subject to consultation, withholding, notice, and judicial review requirements in accordance with sections 557(b) (3) and (4) of the Education Consolidation and Improvement Act of 1981.

"CONTROL OF FUNDS

"SEC. 609. A State or local educational agency may receive funds under this part only if control of such funds, and title to property derived from such funds, is in a public agency, and only if a public agency will administer such funds and property.

"EVALUATION AND DISSEMINATION

"SEC. 610. (a) Each State plan and local educational agency application under this part for fiscal 1985 or any succeeding fiscal year shall contain an evaluation of the programs conducted under this part. Such report shall include (1) a description of the needs determined to exist for inservice teacher training as described in section 604(a)(2); (2) the extent to which training provided under this part during the preceding year has met that need; and (3) a specific list of the expenditures made.

"(b) The Secretary shall utilize the national diffusion network operated under chapter 2 of the Education Consolidation and Improvement Act of 1981 to disseminate information concerning par-

ticularly successful programs under this part to other State and local educational agencies.

"PART B—POSTSECONDARY ASSISTANCE

"FINDINGS

"SEC. 621. (a) The Congress finds that it is necessary (1) to improve the educational foundations of American citizens in order to improve the Nation's economic productivity, (2) to encourage students in postsecondary education to pursue teaching careers in mathematics, science, and foreign language, and (3) to improve the quality of instruction in colleges of teacher education.

"(b) The Congress declares that it is therefore necessary (1) to increase the number and quality of postsecondary students entering careers in teaching, (2) to improve the quality of instruction for future teachers of mathematics, science, and foreign language, (3) to provide enriched opportunities for currently employed teachers, and (4) to evaluate (A) current teaching techniques, including technological improvements in classroom equipment and instructional methods, and (B) methods of improving instruction.

"NATIONAL TEACHING SCHOLARSHIPS

"SEC. 622. (a)(1) Sums available for the purpose of this section shall be used to award national teaching scholarships in accordance with this section to not more than 5,000 individuals for fiscal year 1984, and to not more than 10,000 individuals for fiscal year 1985. Such scholarships may not exceed and amount equal to the tuition and fee expenses of any recipient for two academic years (of undergraduate or graduate education) and may be paid only upon proof of satisfactory achievement in the preceding academic year.

"(2) The Secretary of Education may reserve up to 30 percent of the sums available for national teaching scholarships to make awards to individuals who are currently teachers for one year of study at an institution of higher education. Such awards shall not exceed $5,000 to cover the cost of attendance at such institution and related expenses.

"(b) Each chief State school officer or appropriate State officer responsible for postsecondary education may provide to the Secretary of Education the names and qualifications of a number of individuals who are qualified to receive national teaching scholarships which does not exceed the product of the number of Members of Congress from that State, multiplied by twenty. The chief school officers of the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands may each provide to the Secretary the name and qualifications of not more than fifty such individuals. Such nominations shall be supported by suitable academic credentials and recommendations, and shall include a personal statement by the individual expressing a commitment to pursue a career in teaching.

"(c)(1) National teaching scholars shall be selected by a committee composed of the Librarian of Congress (acting as chairman), the Secretary of Education, the Director of the Office of Science and

Technology Policy, the Director of the National Science Foundation, the Administrator of the National Aeronautics and Space Administration, four individuals appointed by the Speaker of the House of Representatives, and four individuals appointed by the majority leader of the Senate. The individuals appointed by the Speaker and the Majority Leader shall be individuals (A) who are prominent in public or private elementary, secondary, or postsecondary education, such as teachers, professors, administrators, or officials, (B) who are in private business enterprises and who have a thorough understanding of the requirements for educated employees of business, or (C) who are members of the public, including parents of students and students.

"(2) Selections of national teaching scholars shall be made in accordance with regulations prescribed by the Secretary of Education after consultation with the Librarian of Congress, the Director of the National Science Foundation, and the Director of the Office of Science and Technology Policy. Individuals shall be selected on the basis of merit and shall be pursuing a course of instruction in science, mathematics, foreign language, or other course of study identified by the chief State school officer of the pertinent State as having a critical shortage of qualified teachers. The committee shall ensure that the individuals so selected include individuals who are unrepresented or underrepresented in the respective disciplines. The committee shall also assure appropriate geographic distribution of national teaching scholarships.

"(d) To be eligible for selection as a national teaching scholar, an individual shall have completed the equivalent of at least two years toward a baccalaureate degree and shall have formally expressed the intention to teach elementary or secondary school mathematics, science, foreign language, or other appropriate subject for at least two years for each year for which assistance is recieved under this section.

"(e) Each national teaching scholar shall be obligated to teach for two years for each year of scholarship assistance received, or to repay the total amount of the scholarship, plus interest at a rate prescribed by the Secretary of Education.

"(f) Notwithstanding the provisions of section 428(a)(2) (B) through (F) and section 482(a) (1) and (2) of the Higher Education Act of 1965, scholarship funds awarded pursuant to subsection (a) shall not be considered in determining eligibility for student assistance under title IV of such Act, but the sum of student assistance received under such title and a national teaching scholarship shall not exceed the cost of attendance (as such term is defined in section 482(d) of such Act).

"POSTSECONDARY MATHEMATICS, SCIENCE, AND FOREIGN LANGUAGE IMPROVEMENT

"SEC. 623. (a) Funds available for this section for fiscal year 1984 or 1985 shall be made available by the Secretary of Education for competitive grants to institutions of higher education for undergraduate mathematics, science, and foreign language curriculum improvement and faculty development, in consultation with the school or department of education at that institution. Such pro-

grams shall be directed to improving instruction in mathematics, science, and foreign languages for degree and nondegree students who have or who are pursuing teaching certificates.

"(b) Twenty-five percent of the funds available pursuant to subsection (a) for fiscal year 1984 or 1985 shall be made available by the Secretary for programs described in such subsection to institutions of higher education which are eligible for assistance under title III of the Higher Education Act of 1965.

"SUMMER INSTITUTES

"SEC. 624. From the funds available for this section for fiscal year 1984 or 1985, the Secretary of Education shall make grants to institutions of higher education to support summer institutes and workshops for supervisors and certified teachers in elementary and secondary schools to improve the knowledge and skills of such teachers in the areas of mathematics, science, and foreign language, and to improve their instructional skills. Such institutes may, to the extent possible, involve the cooperation of advanced technology firms and other private industries which are able to supply assistance in the teaching of mathematics and science. Such institutes may also be conducted in such other areas as determined by the Secretary. Upon request of the State educational agency, the Secretary may make grants to other public teacher training agencies as established by the State educational agency prior to January 1, 1983.

"INVESTIGATIONS OF EFFECTIVE EDUCATIONAL METHODS AND PROGRAMS

"SEC. 625. (a) The Director of the National Institute of Education, in consultation with appropriate Federal agencies, shall conduct investigations of effective methods of instruction, and effective educational programs, in mathematics, science, and foreign language (including technical literacy and methods to secure full participation of women and racial and ethnic minorities). Such studies may include—

"(1) teaching and learning research in mathematics, science, and foreign languages and on the instructional uses of information technologies;

"(2) application of teaching and learning research to the local and private sector development of instructional materials, and to the improvement of teacher training programs;

"(3) secondary school operations as they affect student learning in mathematics, science, and foreign languages; and

"(4) analysis of local and instititutional policies enhancing or inhibiting the recruitment, retention, and improvement of mathematics, science, and foreign languages faculties.

"(b) There are authorized to be appropriated to the Department of Education and made available to the National Institute of Education and the Fund for the Improvement of Postsecondary Educaton to carry out this section not more than $5,000,000 for each of the fiscal years 1984 and 1985.

"LIMITATION

"SEC. 626. Notwithstanding any other provision of this part, the total amount which may be appropriated pursuant to this part for fiscal year 1984 shall not exceed $50,000,000, of which not less than—

"(1) 40 percent shall be available to carry out section 622; and

"(2) 15 percent shall be available to carry out section 623; and

"(3) 35 percent shall be available to carry out section 624.

"PART C—TEACHER INITIATIVE GRANTS

"AUTHORIZATION OF APPROPRIATIONS TO THE DEPARTMENT OF EDUCATION

"SEC. 641. There are authorized to be appropriated to the Department of Education to carry out this part such sums as may be necessary for fiscal year 1985.

"ALLOCATION OF APPROPRIATIONS

"SEC. 642. The amount appropriated pursuant to section 651 for any fiscal year shall be allocated among the States in the same manner as is required by section 603(a) of this title.

"USE OF FUNDS

"SEC. 643. (a) Funds made available to any State pursuant to this part shall be used to make grants to teachers, who have completed inservice or other training under parts A or B of this title, for teacher initiated projects to improve mathematics, science, and technology education. Such uses may include—

"(1) purchase of equipment for a specific classroom project or demonstration;

"(2) purchase of specialized reference materials;

"(3) transportation and other costs of participation for class visits to science museums, computer centers, laboratories, or institutions involved in research and development; and

"(4) underwriting the cost of bringing special equipment or lecturers to the classroom or school for student and faculty enrichment.

"(b) From the amount available to any State, the State educational agency may reserve not more than one percent of such amount for the conduct of State administration and activities to assist teachers in formulating programs eligible for grants under this part.".

(b) Section 103 of the National Defense Education Act of 1958 is amended to read as follows:

"DEFINITIONS

"SEC. 103. Except as otherwise provided therein, the following terms are defined for purposes of this Act:

"(1) The term 'State' means any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the

Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, or the Trust Territory of the Pacific Islands.

"(2) The term 'institution of higher education' has the same meaning given such term in section 1201(a) of the Higher Education Act of 1965.

"(3) The term 'Secretary' means the Secretary of Education.

"(4) The term 'State educational agency' has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

"(5) The term 'school-age population' means that part of the population which is between the ages of five and seventeen, both inclusive, and such school-age population for the several States shall be determined by the Secretary on the basis of the population between such ages for the most recent year for which satisfactory data are available from the Department of Commerce.

"(6) The term 'elementary school' has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

"(7) The term 'secondary school' has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

"(8) The term 'local educational agency' has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.".

MINORITY INSTITUTIONS SCIENCE IMPROVEMENT

SEC. 103. Section 406A of the General Education Provisions Act (as added by the Education Amendments of 1980; 94 Stat. 1497) is amended to read as follows:

"AUTHORIZATION OF APPROPRIATIONS FOR SCIENCE IMPROVEMENT PROGRAM

"SEC. 406A. There are authorized to be appropriated $5,000,000 for each of the fiscal years 1984 and 1985 for the purpose of carrying out the Minority Institutions Science Improvement program transferred to the Secretary from the National Science Foundation by section 304 of the Department of Education Organization Act.".

COMMITTEE CONSIDERATION OF THE BILL

H.R. 1310 was introduced on February 8, 1983, by Congressman Perkins, Congressman Fuqua and 26 other Members. The bill, as introduced, consists of the texts of two earlier bills, H.R. 30 and H.R. 582. H.R. 30, introduced by Congressmen Perkins, Simon and Goodling and with the co-sponsorship of ten additional Members, was referred to the Committee on Education and Labor. H.R. 582 was introduced by Congressman Fuqua, and referred to the Committee on Science and Technology. H.R. 1310 was jointly referred to the Committee on Education and Labor and the Committee on Science and Technology.

On February 8, the Committee on Education and Labor confined its consideration to Title I of the bill, the Emergency Mathematics

and Science Education Act, and ordered the bill favorably reported to the House by a vote of 27 to 3.

Prior to mark-up of H.R. 1310, the Committee on Education and Labor had conducted four hearings on its predecessor bill, H.R. 30. These hearings were held on January 26, 27, 28 and 31, 1983, and included 40 witnesses representing the Administration, education, the scientific community, and the private sector.

The Committee on Education and Labor began its examination of the issue of mathematics and science education in the 97th Congress. The Subcommittee on Postsecondary Education conducted hearings in September of 1981 on the issue of elementary and secondary school teacher quality. Within this context, legislation was introduced by Subcommittee Chairman Paul Simon which called upon States to establish Commissions on Teacher Excellence. Subsequent hearings on this legislation, H.J. Res. 429, addressed specific shortage areas in elementary and secondary teaching fields, and on May 18, 1982, the Subcommittee heard testimony from Dr. John Slaughter, Director of the National Science Foundation, on how the larger questions of quality and quantity of pre-college teachers related to the fields of mathematics and science.

On September 28, 29 and 30, 1982, the Subcommittee on Elementary, Secondary, and Vocational Education, joined by the Subcommittee on Postsecondary Education on the 29th, held hearings on six bills relating to mathematics and science education. These hearings focused on the severe teacher shortages and student needs in pre-college mathematics and science. The joint Subcommittee hearing on September 29 explored the link between postsecondary preparation of teachers and mathematics and science instruction in elementary and secondary schools.

Thus, H.R. 1310 is the product of extensive Committee investigation, and its content was heavily influenced by findings from the hearings over the past two years.

Summary of the Bill

As reported by the Committee on Education and Labor, Title I deals with mathematics and science education improvement programs at the level of elementary and secondary education (Part A) and postsecondary education (Part B). Part B also authorizes foreign languages improvement programs. Title I will be administered by the Department of Education.

Title II of the legislation establishes policies and programs for the training of engineering, technical and scientific personnel, through the National Science Foundation. The Committee on Science and Technology is considering Title II.

Title I authorizes $300 million for fiscal year 1984 and an open-ended amount for fiscal year 1985 for progrrams to improve the quality of instruction and levels of student achievement in mathematics and science education; to increase the supply and strengthen the qualifications of teachers of mathematics and science; and to encourage students to pursue teaching careers in mathematics, science and foreign languages.

Elementary and Secondary Programs

Part A of Title I authorizes $250 million for fiscal year 1984, out of the aforementioned $300 million total, and an open-ended amount for fiscal year 1985 for an elementary and secondary education grant program for mathematics and science education. No funds are authorized for Part A unless the appropriation for Chapter 1 of the Education and Consolidation and Improvement Act, the program for disadvantaged children, at least equals the preceding year's appropriation.

Part A funds are distributed to States on a formula basis. State educational agencies may reserve up to 25% for State-run programs and administration. At least 75% of each State's funds must be allocated to local educational agencies within the State according to their Chapter 1, ECIA allocations.

The primary purpose of both the State-level and local-level programs is to improve inservice teachers training in mathematics and science. These inservice training projects may focus on improving the skills and knowledge of teachers in mathematics and science and on recertifying teachers of other subjects as mathematics and science teachers.

After meeting the training needs of teachers, State and local educational agencies may use their funds for other activities to improve instructional programs in mathematics and science.

From the amount reserved for State-level programs, each State educational agency must set aside 20% of its share for matching grants to local educational agencies to encourage joint programs with private businesses and other public and private agencies and organizations. In addition, both States and local school districts are encouraged to develop cooperative training efforts with other local educational agencies, institutions of higher education, and other agencies and organizations.

The State and local programs funded under this part must provide for the participation of private school children and teachers. The State and local educational agencies must also ensure equal educational opportunity and the full participation of underrepresented groups, including women and minorities, in these programs. The Part A funds must be used only to supplement, and not to supplant, State and local funds for the purpose of this part.

Postsecondary Programs

Title I, Part B of H.R. 1310 authorizes five programs of postsecondary assistance which reflect the need to (1) graduate a greater number of quality mathematics, science and foreign language teachers who have made a commitment to teach at the elementary and secondary level; (2) upgrade both the discipline content and instructional skills of those currently teaching; (3) improve science, mathematics and foreign language curricula at colleges and universities in coordination with that institution's school or department of education; (4) provide basic research into the problem of mathematics, science and foreign language instruction; and (5) reauthorize the Minority Institutions Science Improvement Program. Of the total $300 million authorization for Title I for fiscal year 1984, $50 million is authorized for the Part B postsecondary programs.

Part B authorizes scholarships to encourage students to become teachers of mathematics, science and foreign language. Scholarships are provided for the first year after enactment for up to 5,000 undergraduate and graduate students. The second year authorizes up to 10,000 scholarships. A two-year teaching commitment at the pre-college level is required for every year of scholarship assistance. Up to 30% of these scholarships may be reserved for teachers who are currently in school systems for one year of study at an institution of higher education. Scholarship nominations are proportioned by State based on population and will be selected by a Federal selection commission based on merit.

Summer institutes will be funded on a competitive basis for intensive, multi-week courses administered by an institution of higher education to improve both the discipline content and instructional skills of elementary and secondary teachers in mathematics and science.

Research through the Department of Education will focus on teaching, thinking and learning in the disciplines of mathematics, science and foreign language and the instructional uses of information technologies, including computers. Development of instructional materials and of teacher education programs is also a focus of this section, along with evaluation, studies and analyses of State and local policies affecting teaching and learning in mathematics, science and foreign language.

H.R. 1310 also authorizes competitive grants to institutions of higher education to develop curricula and faculty improvement programs, directed at improving mathematics, science and foreign language instruction for students pursuing teaching certificates. Twenty five percent of these funds are reserved for institutions serving a high proportion of low income students as defined in Title III of the Higher Education Act.

Part B also reauthorizes the Minority Institutions Science Improvement Program for two years, through fiscal year 1985, at the current authorization level of $5 million.

Background and Need for the Legislation

The United States currently faces a crisis in the area of mathematics and science education. This crisis is evidenced by severe shortages of qualified teachers in mathematics and science, declines in student achievement in these subjects, fewer students taking science and mathematics courses, and fewer skilled technicians and high level scientific personnel emerging from our post-secondary institutions.

These problems threaten to comprimise America's stature in the intermational marketplace, further weaken our industrial base, and undermine our national defense. The situation is not unlike the crisis our country faced in 1957 when the Soviets' Sputnik launch brought to a head concerns over mathematics, science and technical preparation. In that era, Congress enacted the National Defense Education Act of 1958.

The Committee believes that the present conditions demand a renewal of the Federal commitment made in the 1958 Act to strengthen the science and technology foundations of education.

Testimony from Committee hearings, findings of Federal commissions, and reports from private organizations and businesses document the alarming extent of the problem and point to the need for immediate leadership from the national level.

Most States are suffering shortages of mathematics and science teachers and in some States the shortages are critical. Of 45 States responding to a national survey, 43 reported shortages of mathematics teachers, 42 of physics teachers, and 38 of chemistry teachers. Over the past decade, the number of secondary level mathematics teachers being trained in colleges and universities declined 77%; the number of science teacher candidates declined 56%. In Kentucky, for example, the number of certified science teachers produced plummeted from 194 in 1971 to 66 in 1981, according to Mr. Raymond Barber, Kentucky Superintendent of Public Instruction.

Stopgap efforts to abate the shortages have resulted in underqualified teachers being hired. Of the teachers newly employed in 1981–82 to teach high school mathematics or science, 50% were formally unqualified and teaching with emergency certificates. Recent figures from the National Science Foundation indicated that 16% of all elementary school teachers are not prepared to provide basic instruction in science and mathematics.

A major reason why our best mathematics and science teachers are leaving the classroom is the higher salary scale paid by private industry to persons with their skills.

Beginning mathematics teachers with bachelors degrees now earn only 60% of what bachelor degree candidates in mathematics and science earn in private industry. Other frustrations of teaching, including discipline problems, inadequate teaching tools, lack of time or opportunity for professional development, and the lack of public esteem for the profession, undoubtedly contribute to this exodus. Almost five times as many science and mathematics teachers left the classroom in 1980 for other jobs than left due to retirement. At this pace, the nation will have a net loss of 35% by 1992.

For similar reasons, young people with the necessary background are refusing to even enter the teaching profession. In 1980, only 55% of the graduates prepared to teach mathematics actually went into teaching. According to a joint American Council on Education/University of California at Los Angeles study, only 4.7% of freshmen entering college in 1982 wanted to enter the field of teaching.

Those who do remain in the classroom are often inadequately prepared and out-of-date with new developments in their fields, and are afforded few opportunities for improvement.

STUDENT PREPARATION AND ACHIEVEMENT

The number of students taking advanced mathematics and science courses is dropping, along with the overall level of students' achievement in these subjects.

One-half of all U.S. high school students take no mathematics or science beyond the 10th grade. Only 34% of our high school graduates have completed three years of mathematics, and less than

20% have taken three years of science. Only 8% have taken calculus.

Students cannot take courses if their schools do not offer them or if there are no teachers qualified to teach them. These factors are in part responsible for the decrease in students' participation. According to a survey of the National Science Teachers Association, some 32,000 classes in science and mathematics which were needed for school year 1982–83 could not be scheduled for lack of teachers or resources. Some 640,000 children who wanted to take science or math were required instead to take courses in other subjects for which no teacher shortage existed. The unavailability of courses is particularly acute for the most advanced levels. There are only 10,000 high school physics teachers for the nation's 16,000 school districts, and fewer than one-third of the school districts offer physics courses taught by qualified teachers. Calculus is taught in only 31% of United States high schools. When courses are taught by underqualified or out-of-date teachers, working with substandard materials and equipment, this undoubtedly affects students' motivation to pursue additional courses in these subjects.

Secondary school graduation requirements are also a contributing factor. Currently only one-third of the nation's 17,000 school districts require graduates to take more than one year of mathematics or science, and seven States require no mathematics.

The failure of high school students to take these courses severely circumscribes their career options. It also exacerbates the teacher shortage, since students without sufficient background in mathematics or science cannot themselves become teachers of these disciplines.

The dilemma persists at the postsecondary level. According to a University of California survey, 92% of the women and 43% of the men in the freshman class had already disqualified themselves from three-quarters of the possible majors for lack of sufficient mathematics. Another national survey of probable majors of entering freshmen indicated that in 1970, 52,400 college and university freshmen planned to major in mathematics or statistics. By 1980, the number had plummeted by 80%, down to 10,250.

Dr. Morris Norfleet, President of Morehead State University in Kentucky, summed up the quandary at the postsecondary level:

> As related to curriculum liberalization, colleges and universities are not blameless either. We also weakened our curricula, permitting students more freedom of choice in course selection. More times than not, students opted for courses other than in science and mathematics. Many students coming to us from the secondary schools lack the basic skills to deal with college level science and mathematic courses. The increase in the number of students we have in remedial science and math courses attests to this fact.

The scientific preparation of U.S. students stacks up poorly against that of students in certain other industrialized countries. In addition to two years of calculus, all high school graduates in the Soviet Union are required to complete five years of physics, four years of chemistry, four years of biology, and five years of algebra.

In Japan, all college-bound students take four years of math and three years of science. In Germany, fifth-graders take chemistry, physics, and biology, studying each two to three hours per week. American students fall short at the postsecondary level, too. Twenty percent of Japanese undergraduates and 35% of German undergraduates major in science or engineering, compared with 6% of United States undergraduates. It is, therefore, no surprise that last year the Soviet Union graduated over 300,000 engineers, Japan produced 80,000, and the United States 65,000.

Student achievement in mathematics and science has fallen, too. The mean SAT score in mathematics dropped from 502 in 1963 to 466 in 1980; the proportion of students scoring over 700 went down 15% between 1967 and 1975. The National Assessment of Educational Progress found a steady decline in the science achievement scores of U.S. 17-year olds, as measured in 1969, 1973, and 1977. The National Assessment data reveal some particularly disturbing trends relating to the "higher order" skills, such as mathematical problem-solving, and to the "high-achieving" students (those in the top 25%). Most 17-year olds demonstrated a lack of basic mathematical problem-solving skills; for example, 58% were unable to find the area of a square given one of its sides. In the aforementioned assessments of science, the decline for higher-level science skills was found to be twice as great as the decline in the lower-level skills. The assessments also show the academically able students losing ground. The mathematics and science skills of high achievers at all three age groups measured fell during the past several years, dropping by a range of 2.5 to 4.3%.

FOREIGN LANGUAGES

As vital as mathematics and science are to our national security and economic growth, the same can be said for foreign languages. Our citizens' general lack of foreign language capabilities hinders our dealings with other countries, in areas as diverse as defense negotiations and international trade. In 1980, the President's Commisssion on Foreign Language and International Studies reported they were "profoundly alarmed" at the "serious deterioration" they had found in U.S. language capacity. There is a strong nexus between the need to improve mathematics and science instruction because of their relationship to high technology industries and the need to strengthen foreign language training. The international leaders in high technology are all non-English speaking countries. Although in many areas the current supply of French, German and Spanish teachers appears adequate—given the current demand—as local school boards and postsecondary institutions move to restore foreign language graduation requirements, more teachers will be needed in these areas, as well as Arabic, Japanese and the Russian languages.

During hearings on foreign language and teacher quality, the Committee heard statistics documenting our nation's foreign language deficiencies. Eighty percent of the world's population speaks Chinese, Japanese and Arabic, but only one percent of all public school students are enrolled in these courses nationwide. Further, one out of every six Americans owes their job to foreign trade, but

Americans lose 100,000 jobs a year because they do not know a foreign language. A recent National Science Foundation study of industrial firms points to a decline in the demand for college graduates with science and engineering degrees in most fields. While this decline in demand can be partially explained by the current economic crisis, it is also an indication that in addressing the problem from a national perspective, we should not place all of our eggs in the mathematics and science basket. The growing problem of mathematics and science literacy which impacts our economy is intertwined with international market conditions and competition which clearly brings in language capacity in the process.

According to the Joint National Committee for Languages, only 15% of all high school students in the U.S. study a foreign language. That figure was 24% in 1965. Meanwhile, only eight percent of U.S. colleges require a foreign language for admission. The figure was 34 percent in 1966. Consequently, by the time students reach college, only nine percent of them enroll in a foreign language course each year

The shortage of foreign language teachers in Chinese, Japanese, Arabic and the Russian languages is just as acute as that for qualified mathematics and science teachers.

UNDERREPRESENTATION OF WOMEN AND MINORITIES

The problems cited above are even more acute for women and racial and ethnic minorities. Women and minorities have generally been underrepresented in scientific and technical fields and in educational programs leading to those fields, and this situation persists despite these groups' recent gains in other fields. Of the approximately 2.74 million scientists in the nation in 1978, only 1.5 percent were black and 5.2 percent were females. In 1979, blacks earned 6 percent of the bachelor's degrees in scientific fields, 4 percent of the Master's degrees and 3 percent of the Doctorates. Women are only 5 percent of the recipients of advanced engineering degrees and, in 1980, only 30 percent of all college graduates specializing in computer and information sciences were women.

These sexual and racial variances take root at the elementary and secondary levels. Black and Latino students take fewer courses in algebra and geometry than whites and are enrolled in fewer advanced or honors mathematics classes. Fewer minority students take the advanced portion of the Scholastic Aptitude Test, often required for admission into science ma[illegible] ir college. In 1981, one-half of college-bound girls, compared to two-thirds of college-bound boys, had completed four years of high school math, often a prerequisite to a science major. A study conducted in the fall of 1981 by the Project on Equal Education Rights of the NOW Legal Defense and Education Fund of 113 school districts in Michigan reflected this national pattern. The study found that boys outnumbered girls two to one in computer math courses; in one school district the percentage of girls in computer math was as low as 22 percent. Girls were 40 percent of the students in calculus and 43 percent of the students in trigonometry. There were advanced science courses with enrollments as low as 19 percent female.

These differences by sex and race have enormous implications for our future economic stability. While the absolute number of high school graduates is decreasing, women and minorities will comprise a greater proportion of the work force. At the same time, traditionally-female occupations, such as clerical worker, bank teller, and telephone operator, are undergoing vast changes. Approximately 80% of working women now work in occupations which are rapidly becoming obsolete or changing markedly as a result of technological advances.

OTHER NEEDS IN MATHEMATICS AND SCIENCE EDUCATION

Deficiencies in mathematics and science curricula and equipment are aggravating the teacher shortages and student achievement declines. Many school systems lack up-to-date or interesting curricular materials, and this contributes to students' avoidance of math and science courses. Laboratory equipment is often scarce and antiquated. Many systems cannot afford to purchase technological hardware and software or train teachers in its use. According to a National Science Foundation report, 67% of math and science teachers surveyed said they needed help in getting information about new instructional materials, but only half received any assistance. Sixty percent of the teachers mentioned maintenance of equipment as their primary need. The National Association of Secondary School Principals' testimony stated that only 45% of all secondary schools possessed some kind of science equipment, and those schools that did budgeted an average of only $5.50 per student. As regards curriculum, Dr. Robert E. Yager, President of the National Science Teachers Association testified, "The curricula in most schools are curricula of the sixties, and they are obsolete."

NEEDS OF INDUSTRY AND DEFENSE

Our nation is already paying the price of scientific and technological illiteracy, with our productivity declining, our industrial base ailing, and our global competetiveness dwindling. Within 20 years, we face a dire situation, as a generation of students ill-prepared in science and mathematics comes of age. Unless we take steps now, we will be hopelessly surpassed by other countries in the technological fields, in new and emerging industries and in new scientific developments and research.

The jobs of the future will require people with scientific and mathematical skills. Demand for electrical and computer engineers in the U.S. electronics industry is expected to exceed the supply by almost 40% by 1985. The most rapidly growing occupations throughout the rest of this decade will be in high technology fields: the number of data processing mechanics is expected to grow 148% by 1990, computer analysts by 108%, programmers by 74%, computer operators by 88%, and office machines service personnel by 81%. By 1990, according to the projections of futurists, between 40 to 50% of American workers will use electronic-technical equipment on a daily basis.

These trends will affect not only America's economic well-being, but also our national defense. New recruits who lack technical, computing, and in some cases basic reading skills cannot be relied

upon to operate sophisticated equipment and weapons. At the higher levels, our national security will surely suffer without skilled people to design and operate modern defense systems. The Armed Services and the Department of Defense are already experiencing problems in recruiting and retaining technically-trained persons. The Air Force reports that 57% of its present civilian vacancies are for engineers; in 1980 the Navy reported it could only fill 53% of its needs for entry-level engineers. Between 1980 and 1982, the Army experienced an increase of 34% in technical skill requirements. By the year 2000, the Air Force forecasts a 33% increase in its need for persons with mechnical and electronic aptitude, according to Mr. Alvin Tucker, Director of Training and Education for the Assistant Secretary of Defense (Manpower, Reserve Affairs, and Logistics), Department of Defense. By 1987, Mr. Tucker testified, the Navy anticipates a 16 to 17% growth in its need for people with math, science, and technical skills.

NEED FOR FEDERAL LEGISLATION

As vividly demonstrated by the above statistics, our nation confronts serious, widespread problems in mathematics and science education. These problems pervade elementary, secondary, and postsecondary education. They affect teachers, students, employers, and the military. Their severity has been recognized by individuals across the political spectrum, throughout the regions of the country, and in many professions. President Reagan, in his State of the Union Message of January 25, 1983, proposed the following new program:

> A quality education initiative to encourage a substantial upgrading of math and science instruction through block grants to the States.

Congressman George Brown, himself an engineer, told the Committee:

> It is also critical that we be aware of the potential for these new technologies to further divide society. Those who cannot cope with our current society will be left even farther behind unless we make up for our past inadequacies in education and training. . . . Clearly, we need to tackle the problem at a number of different levels, from elementary school education through adult education and retraining. It is also clear that innovative curricula and new educational structures may be needed.

Congressman Ike Skelton, a member of the House Armed Services Committee, pointed to the broader repercussions of a scientifically illiterate America:

> A shortage of trained technical personnel would have serious implications for our defense posture, which relies on sophisticated ships, planes and tanks. It also would have a negative impact on our economy which depends on the skills of scientists and engineers for advances in agriculture and industry.

The crisis in mathematics and science education demands solutions from all levels of government, local, State and Federal. Some facets of the problems are more appropriately addressed at the State or local level; for example, setting of requirements for graduation or determining teacher salaries. But State and local governments, given their wide disparities in available resources and limitations in coordinating across jurisdictions, cannot solve these dilemmas alone. There is clearly a role for the Federal government, to focus national attention on conditions that affect all parts of the country, to coordinate efforts from a national perspective, to encourage other levels of government to seek solutions, and to provide aid toward some possible remedies.

The Administration has recognized the need for a Federal role in its legislative proposal, the "Science and Mathematics Teacher Development Act". H.R. 1310 goes beyond the Administration's counterpart proposal, transmitted to Congress on February 2, 1983. The Administration's proposal addresses one aspect of the problem. It proposes $50 million to enhance the qualifications of mathematics and science teachers through scholarships to "individuals who can become qualified within one year to teach science and mathematics at the secondary level, in grades nine through twelve."

The Administration's proposal focuses only on increasing the pool of certifiable mathematics and science teachers and only on the secondary level. Further, it offers no long-range incentives for young people to pursue teaching careers and overlooks the need to improve postsecondary faculty and curriculm to strengthen teacher education.

H.R. 1310, particularly Part B, broadens the narrow focus of the Administration's proposal. H.R. 1310 contains both long-term and short-range measures to beef up the teaching force; addresses current and future teachers; deals with faculty and curriculum development; and includes both elementary and secondary teachers in all programs.

H.R. 1310 defines an immediate Federal role for improving mathematics and science education and teacher preparation. The bill addresses the teacher shortage and qualifications problems through a combination of scholarships to encourage students to become mathematics, science and foreign language teachers, summer institutes, and State and local inservice training programs to enhance the skills of current teachers. The problems of student preparation and achievement are dealt with by authorizing educational agencies and institutions to develop activities to improve, expand and modernize mathematics and science education. In addition, teachers who have participated in the training programs funded under this bill are expected to promote student achievement when they return to the classroom. The underrepresentation of women and minorities in these disciplines is treated with several provisions in the bill requiring grantees to take steps to ensure equal educational opportunity.

With this modest Federal commitment, H.R. 1310 will have long-range benefits for our economy, defense, and international reputation.

PROVISIONS OF THE BILL

The Committee on Education and Labor restricted its consideration of H.R. 1310 to Title I. That title, as reported from the Committee, is discussed below.

Title I of H.R. 1310 adds a new Title VI to the National Defense Education Act of 1958. One of the earliest Federal programs aiding education, the National Defense Education Act addressed Americans' post-Sputnik concerns about our students' mathematical, scientific, and technical preparation. That Act is, therefore, a suitable home for these new programs.

The Department of Education would administer the Title I programs in the Committee's bill. The Department of Education has much experience in overseeing large-scale grant programs, has long-standing relationships with educational agencies and institutions, and is in a position to coordinate the new Title I programs with existing education programs.

PART A—ELEMENTARY AND SECONDARY PROGRAMS

Authorizations

Part A authorizes $250 million for fiscal year 1984 and an open-ended amount for fiscal year 1985 for an elementary and secondary education grants program to strengthen teacher skills and qualifications and improve instruction and student achievement in mathematics and science.

Although $250 million falls short of the amount necessary to alleviate all of the problems our nation faces in this area, it represents a realistic starting point, in light of the fiscal year 1984 budgetary constraints. The Committee feels that our country cannot afford to wait for billions of dollars to become available to confront the mathematics and science education crisis. The $250 million will provide the funds urgently needed to initiate programs and to immediately address the most pressing needs, such as teacher training.

In creating this new program, the Committee does not intend Part A to be funded at the expense of existing educational programs, particularly those for the disadvantaged. Thus, the Committee bill prohibits the authorization of funds for Part A unless the Chapter 1 program for disadvantaged children under the Education Consolidation and Improvement Act if funded at a level at least equal to its preceding year's level.

Due to its emergency nature, Part A does not have to be advance funded for fiscal 1984, as permitted by Section 411 of the General Education Provisions Act. The Committee hopes to see Part A funds appropriated for fiscal year 1984 and made available for use at the State and local level as rapidly as possible. However, the Committee would like to see Part A advance funded for fiscal year 1985.

In determining whether the aforementioned provision relating to Chapter 1 has been met for purposes of a Part A fiscal year 1984 appropriation, the Appropriations Committee may compare the fiscal year 1984 Chapter 1 appropriation with the fiscal year 1983 appropriation, even though these appropriations will not be used at

the local level until school year 1984-85 and school year 1983-84, respectively.

Funds distribution

The formula for distributing Part A funds to the States (including the District of Columbia and Puerto Rico) contains two parts. One-half of the amount appropriated is to be allocated according to the National Defense Education Act, Title III formula, whereby each State's school-age population is multiplied by an income factor based on the State's income per school age child. The other half of the money is to be allocated on the basis of each State's school age population, multiplied by the ratio of the State's Chapter 1 cost factor to the National Chapter 1 cost factor. The State and National Chapter 1 cost factors are based upon average per pupil expenditures within a minimum and a maximum.

One percent of the appropriation is set aside for distribution by the Secretary of Education among the outlying areas. One-half of one percent is set aside for transfer to the Secretary of the Interior to operate Part A programs in Bureau of Indian Affairs schools.

In determining Part A allocations, the Secretary of Education should use the most recent available data.

State and local shares

Both the State educational agency (SEA) and the local educational agency (LEA) have responsibilities for developing and operating programs under Part A. The SEA may retain up to 25% of the State grant for State-level programs and administration. The SEA must distribute at least 75% of the funds to LEAs within the State, on the basis of their Chapter 1 allocations. This arrangement assures almost every school district in the country a grant of a useable amount, yet retains an adequate amount for activities more easily offered or coordinated from the State level.

The Committee feels that a formula grant program down to the local level is an essential component of any comprehensive solution to the widespread problems depicted above. In considering the appropriate division of funds and responsibilities between the State and local level, the Committee sought to provide every eligible school district with a sufficient amount to meet some of its most pressing teacher training needs, alone or in cooperation with other educational agencies. According to testimony received from the National School Boards Association, small school districts surveyed estimated that needed inservice activities could be done with amounts in the $1,800 to $2,800 range. Fully funded, H.R. 1310 would provide a sizeable portion toward that sum for even the smallest school districts.

Local use of funds

The Committee bill places a high priority upon teacher training as an activity at both the State and local levels. Given the serious shortages of adequately-prepared teachers in mathematics and science and the major impact the teacher has on the quality of instructional programs and student achievement, the Committee feels this is the most appropriate, cost effective use of limited dollars.

The Committee bill sets forth a "step ladder" approach for using funds at the State and local level, with teacher training programs at the center. For local school districts, the bill lists three broad categories of authorized activities in the order they are to be approached, but with maximum flexibility for the LEA to develop specific programs that meet local needs.

First, the school district may use funds to assess the needs for improvement of mathematics and science education in the district, to determine methods of meeting those needs, and to provide services necessary to help school administrators and board members assess those needs. Local needs assessments and plans must address the needs of women and racial and ethnic minorities and other underrepresented groups in mathematics and science programs. The assessment step is intended to encourage school districts to focus on their needs and plan the most appropriate responses within their funding limitations. It is not intended to require LEAs to submit detailed plans or paperwork or to initiate new plans or assessments if adequate ones have already been done.

Services to administrators and school board members under this provision should be limited to a level of assistance necessary for the local educational agency to adequately conduct the needs assessment and planning discussed under this section. Services may include administrator or school board training, contracted expert assistance, and purchase of reference materials. Expenditures for administrator or school board training should be limited to the actual cost of training, excluding any cost of travel, accommodations or stipends.

After completing the assessment activities, the LEA may use funds for inservice teacher training activities. These training projects may focus on improving teacher knowledge of and teaching skills in mathematics, science and their applications. The training programs may serve, at the LEA's discretion, current teachers of mathematics and science, general teachers (such as elementary school teachers) who need to improve their skills in mathematics and science, or teachers of other subjects who wish to become recertified in mathematics and science. School districts may also provide training of principals for the supervision of course offerings in mathematics, science and their applications. Funds under this category may also be used to pay expenses for teachers to attend State-operated teacher training programs in mathematics and science, such as those funded under the State's portion of the Part A grant and the summer institutes authorized in Part B of Title I. All LEA teacher training programs funded under Part A must meet State standards for teacher training, retraining and professional development.

The Committee bill is intended to ensure that all elementary and secondary school teachers will be eligible for in-service training in mathematics, science and their applications, including the use of computers for the teaching of these subjects. The Committee also intends that inservice training authorized by this section be used to improve instruction in mathematics, science and their applications for all students, not just those seeking scientific or technical careers.

All of the above teacher training projects are intended to provide incentives for teachers to remain in the profession. The Committee expects that the increased professional development opportunities, with expenses paid, will not only enrich the participants' skills but also enhance their professional satisfaction.

After meeting the teacher training needs described above, with Part A funds or funds from other sources, the LEA may use its funds for other activities to modernize, expand, or improve instructional programs in mathematics and science in the school district. These may include such activities as curriculum development, acquisition of instructional materials and equipment or technological hardware and software, educating students in the use of technology in mathematics and science courses, and magnet schools for mathematics and science.

H.R. 1310 also permits LEAs to use funds for development, production, and distribution of educational television services to train teachers or, after teacher training needs have been met, for uses directly related to mathematics and science instruction.

The above list of LEA eligible activities is illustrative and not intended to preclude LEAs from supporting other mathematics and science education improvement projects. H.R. 1310 allows a great deal of local discretion in the use of funds.

The bill encourages LEAs, in carrying out these training and improvement activities, to thoroughly consider establishing joint programs with other LEAs, the SEA, institutions of higher education, educational service agencies, or area vocational education schools. This provision is particularly important for those LEAs that will recieve grants too small to offer their own training programs. LEAs are encouraged to explore such options as setting up consortia with other LEAs, institutions and agencies to provide training or paying expenses for their teachers to attend State or regional training programs.

School districts may also operate programs with private business enterprises, museums, libraries and other public and private organizations and agencies, with the LEA controlling the Part A funds. Examples of coordination with other agencies might include student use of computer terminals in public libraries, the loan of microcomputers by schools to public libraries for the summer months, cooperation by school and public or academic libraries in providing access to data bases, and identification of data bases in the public domain with an eye to their instructional application in the schools, as long as all the above activities are directly tied in to mathematics and science instruction.

State uses of funds

At the State level, H.R. 1310 also emphasizes inservice teacher training programs in mathematics and science. These State-level programs may encompass the same variety of training purposes as the local programs, including teacher improvement, recertification, school principal training and payment of expenses related to summer institutes. As regards principal training, the Committee notes the importance of effective leadership in strengthening course offerings in mathematics and science.

The State has discretion over how to best meet its teacher training and mathematics and science improvement needs. However, the Committee envisions an important coordinating role for SEAs, particularly as regards providing training opportunities for LEAs unable to offer their own training programs. Accordingly, the bill authorizes SEAs to operate programs directly or to make grants or contracts with LEAs and institutions of higher education. The SEA must thoroughly consider establishing joint training programs with LEAs, educational service agencies, area vocational education schools, and institutions of higher education.

From the State portion of Part A, the SEA may make grants to assist LEAs with special needs. These may include grants for cooperative programs in rural school districts and grants to increase the representation of underrepresented groups in mathematics and science.

The Committee bill requires each SEA to reserve 20% of its share for matching grants to LEAs to operate joint programs. These joint programs may be operated in conjunction with private business enterprises, institutions of higher education, museums, libraries and other public or private nonprofit organizations and agencies. These "incentive" grants are intended to attract funds from other sources toward mathematics and science improvement.

The Committee heard persuasive testimony about some creative arrangements involving schools and the private sector. For example, the Control Data Corp. committed about $200,000 of matching funds to improve the reading and mathematical skills of District of Columbia public school students, through a computerbased education system. Students participating in this program have exhibited significant improvements in test scores.

Under this 20% incentive program, Part A funds must be matched on a 50–50 basis. Funds under Chapter 2 of the Education Consolidation and Improvement Act (the education block grant) are the only Federal funds that can be counted in the local matching share.

These incentive programs might encompass such activities as teacher training by the private business sector, use of private sector personnel to donate time in elementary and secondary schools, sharing of equipment and facilities, instruction at private sector facilities, libraries, or museums, creative arrangement with libraries and museums, and improving the skills of teachers while employed in summer jobs. Private sector personnel must be under the supervision of State-certified teachers when instructing students in the classroom. However, this provision should not be interpreted to mean that these private sector personnel must be strictly supervised during every moment they spend in the school building or classroom.

After the State's needs for the types of teacher training outlined in Part A have been met (with Federal funds or other resources), and after at least 20% of the State share has been reserved for incentive programs, the SEA may use its portion of Part A for other State priority activities for modernizing, expanding, and improving mathematics and science education, at its discretion. The examples listed earlier for local discretionary activities might also be applica-

ble at the State level. No more than 12% of the SEA's 25% share may be used for State administration.

General provisions

Part A contains necessary administrative and general provisions, while avoiding overly-prescriptive Federal requirements.

To receive funds, each LEA must submit an application to the SEA consisting of certain minimal assurances. The SEA must certify this application. SEAs that desire grants must submit plans for certification to the Secretary of Education.

The State plans and local applications for every year after the first year of the program must include an evalution report, listing the expenditures made with Part A funds and appraising the results of the teacher training projects supported during the previous year. The bill directs the Secretary of Education to disseminate, through the existing National Diffusion' Network, information about particularly successful programs funded under Part A.

Another general provision requries State and local educational agencies to use Part A funds only to supplement and not to supplant State and local funds.

H.R. 1310 calls upon States and local school districts to take steps to ensure equal educational opportunity and the full representation of underrepresented groups, including women and minorities, in Part A. Needs assessments, plans, inservice training, joint programs and other programs funded under this Act must be developed in a way that addresses the special needs of women and racial and ethnic minorities in mathematics and science education. Teacher training funded under this Act should include components that help teachers understand the different educational needs of women and racial and ethnic minorities assistance in addressing those needs in the classroom. Joint programs can include involving parents and private industry in programs aimed at encouraging the full participation of women and racial and ethnic minorities.

The Committee bill requires State and local educational agencies to provide for the participation of private school children and teachers in all Part A programs, after consultation with appropriate private school representatives, and taking into account the number of children served by private schools. The bill also contains a "bypass" provision whereby the Secretary of Education may directly arrange for services to private school children or teachers when the public agencies are prohibited by law or have failed to provide for private school participation. In addition, the legislation stipulates that control and administration of Part A funds must remain with a public agency.

Other general administrative provisions relevant to the programs in Title I are found in the General Education Provisions Act (GEPA). The Committee refutes the Administration's contention that GEPA does apply to certain education programs and reasserts the principle that GEPA applies to all education programs administered by the Secretary of Education.

PART B—POSTSECONDARY ASSISTANCE

Part B is aimed at preparing new mathematics, science, and foreign language teachers and improving and updating the skills of current teachers. Part B also seeks to strengthen postsecondary mathematics, science, and foreign language instruction for students entering teaching and to stimulate educational research in those disciplines.

Authorizations

For fiscal year 1984, the authorization for the Part B programs is limited to $50 million. Of this amount, at least 40% is to be used for teaching scholarships, at least 15% for the postsecondary program improvement activities, and at least 35% for summer institutes. For research $5 million is authorized for fiscal year 1984 (to be counted in the $50 million appropriation). For fiscal year 1985, the authorizations for all the sections of Part B are open-ended, except for research, which is authorized at $5 million.

National Teaching Scholarships

H.R. 1310 establishes the National Teaching Scholarships program authorizing up to 5,000 such scholarships in the 1984–85 academic year and up to 10,000 scholarships in the 1985–86 academic year. These scholarships may not exceed the tuition and fees of the recipient and are intended to provide a significant number of qualified mathematics, science, and foreign language teachers by attracting students to the field of pre-college teaching.

The Secretary of Education may reserve up to 30 percent of these scholarships for awards to individuals currently teaching, for one year of study at an institution of higher education. These awards to current teachers may not exceed $5,000 to cover the cost of attendance and related expenses. The cost of attendance means the total of (1) tuition and fees; (2) books, supplies, transportation and personal expenses, including child care; and (3) room and board. The Committee intends that the Secretary not add to or dilute, by regulation, the specific meaning given to the cost of attendance in H.R. 1310.

The remaining scholarships may be awarded to eligible undergraduate students, graduate students, and retired or unemployed teachers, scientists, mathematicians, or linguists who could be prepared to teach mathematics, science and foreign languages in elementary and secondary schools. The Committee intends that the broadest eligibility standards be adopted in the Secretary's regulations, beyond those specified by law, i.e., the nominee must provide proof of satisfactory completion of at least two years of collegiate academic work, according to the standards of the institution the student attends; a personal written commitment to pursue a career in teaching; and several personal recommendations regarding the applicant's interest and ability to teach.

Scholarship nominations are made to the Secretary of Education by each State's chief school officer or appropriate State officer responsible for postsecondary education. Where responsibility is given a chief State school officer in this section, it is intended to apply to the highest ranking education official in the State respon-

sible for postsecondary education. In States where there is no official responsible for postsecondary education, the term chief State school officer means the highest ranking State official responsible for education programs and policies.

Under the bill, each chief school officer is permitted to nominate a number of individuals that does not exceed the product of the number of Members of Congress from that State multiplied by 20. The territories and the District of Columbia are allotted 50 names each. It is recognized that there are State variations in the supply and demand for teachers in a number of academic concentrations, and provision is made for a chief State school officer to certify shortage areas of academic concentration in teaching in that State when shortage areas are not in mathematics, science, or foreign language.

Scholarship recipients are to be selected by a committee composed of five Federal officials and eight public and private sector representatives, four of whom are appointed by the Speaker of the House and four by the Senate Majority Leader. The Librarian of Congress will chair the committee.

The Secretary of Education is charged with prescribing regulations for selecting scholars, after consulting with other Federal officials on the committee. In exercising this authority, the Secretary shall establish criteria for making scholarship awards, indicate what information or material shall be submitted in order to properly evaluate each applicant, and prescribe how geographic distribution of the awards will be achieved.

The selection committee will choose scholarship recipients from the pool of qualified nominees provided by the chief State school officers. The nomination process ensures that the nominees will reflect geographic diversity. The statute also requires consideration to be given to individuals from groups traditionally unrepresented or underrepresented in these disciplines. From this geographically diverse and racially and ethnically representative pool of men and women nominated by the chief State school officers, the merit selection process will award the National Teaching Scholarships. This legislation requires the selection committee to include among the scholarship recipients persons from various States and territories, various racial and ethnic groups and women, within the established merit criteria. Scholarship recipients shall include some persons who are or who will be teaching at the elementary level and some at the secondary level.

Scholars are obligated to teach two years for every year of scholarship assistance they receive, or to repay the total amount plus interest. The Secretary of Education shall decide what interest rate shall be assessed if the student fails to complete the service requirement. The Committee specifically intends that the Secretary establish an interest rate high enough to encourage scholarship recipients to complete their service requirement.

Section 622(f) is intended by the Committee to assure that low and middle-income students receive all of the Higher Education Act, Title IV, Federal student aid, for which they may be eligible, *and* receive a tuition and fee National Teaching Scholarship—as long as the total does not exceed the cost of attendance as determined by the institution of higher education. The elements to be

considered are defined in Section 482(d) of the Higher Education Act and include the following: tuition and fees; books, supplies, transportation and personal expenses; and the cost of room and board.

The Committee specifically intends that the student aid administrator determine cost of attendance at that institution, and that regulations issued by the Secretary regarding cost of attendance under the Pell Grant Program (34 CFR 690) not be applicable.

Curriculum Improvement and Faculty Development at Institutions of Higher Education

H.R. 1310 provides for competitive grants to institutions of higher education to improve mathematics, science and foreign language curricula and to provide programs for faculty development. Grants under this section are for undergraduate programs only. Applicant institutions must show coordination between the discipline(s) to be upgraded under this section and the institution's school or department of education. It is necessary that this cooperation be required for an improvement and development grant so that those students of education planning a career as pre-college mathematics, science or foreign language teachers have a coordinated and quality curriculum of both pedagogy and content in their chosen academic concentration.

The National Teaching Scholarships encourage students to become pre-college mathematics, science and foreign language teachers, but do not address the quality of instruction at the institutions these students attend. It is therefore vital that in the process of increasing the quantity and quality of pre-college math, science and foreign language teachers, that attention be given to the undergraduate programs these students of education pursue.

Under this section it should be recognized that a significant number of teachers are graduated from small, liberal arts colleges that do not have the resources of a large, research university. Therefore, both the quality of the proposed improvement program of the applicant and the resources currently available at that institution should be considered in the grant award process.

Twenty-five percent of funds under this section are reserved for Higher Education Act (HEA), Title III institutions. These institutions meet a formula which establishes that they serve a predominantly low-income student population. These institutions have traditionally lagged behind their counterparts in the higher education community in providing the most updated curricula and equipment in mathematics, science and foreign language and have a particular need for assistance in program improvement and faculty development which cannot be funded from institutional resources.

Summer Institutes

Section 624 of the Emergency Mathematics and Science Education Act authorizes the Secretary of Education to make competitive grants to institutions of higher education for summer institutes. These summer institutes and workshops are aimed at improving the teaching skills and knowledge in mathematics, science and foreign language of certified teachers in elementary and secondary schools and of educational supervisors. Upon the advice and certifi-

cation by a chief State school officer that shortages of elementary and secondary teachers exist in a State in another discipline, the Secretary may also award summer institute grants to focus on areas of shortage other than mathematics, science and foreign language.

The Secretary of Education shall consult with the Director of the National Science Foundation to determine criteria for awarding summer institute grants. The institute must meet or exceed the academic standards of the host institution.

The summer institutes are intended to stress study in mathematics, science and foreign language subject content, such as new developments in science, as well as study in the skills and techniques of teaching. To be eligible to participate, a teacher must be State-certified or certified by an appropriate agency in the case of non-public school teachers. One purpose of the institutes is to improve the knowledge of those already teaching mathematics, science and foreign language. However, the legislation does not limit summer institute attendance to those teachers already qualified to teach mathematics, science and foreign language. The summer institutes may also offer opportunities for teachers in other fields to begin qualification for recertification in mathematics, science and foreign language. It is expected that the inclusion of pedagogical skills in the program of the summer institutes will not only enhance the teaching skills of current mathematics, science and foreign language teachers, but also provide instruction in teaching skills applicable to mathematics, science and foreign language to teachers of other areas.

While most specialized mathematics, science and foreign language courses are offered in high schools, the foundations for both the interest and the basic skills to pursue high school science, math and foreign language courses are formed at the elementary level. It is, therefore, vital that elementary school teachers be included as participants in summer institutes.

The inclusion of supervisors as eligible for attendance recognizes the need for department coordinators, principals and other appropriate administrative officials at the elementary and secondary level to participate in any upgrading of content and teaching techniques which may be applied to a school or school system.

Many states have established programs and priorities to address needs for improved teacher supply and quality in the areas of mathematics and science. Some states are currently engaged in teacher institute programs which provide inservice and other teacher training programs. Most states have on hand comprehensive state inservice teacher education plans. The Federal program in support of summer institutes is intended to expand State and local efforts where they exist rather than duplicate or replace existing programs. Applicant institutions are urged to cooperate with State and local educational agencies in meeting State and local priorities for upgrading teacher skills. Summer institute programs administered by a State education agency prior to January 1, 1983 are eligible for Federal summer institute grants, with the state agency acting as the applicant.

When appropriate, the institution of higher education applying for a summer institute grant is encouraged to cooperate with the

private sector. This cooperation may involve the use of privately owned equipment, to structure a summer institute in an area of academic concentration where the private sector has expertise. Cooperation with the business sector may also include financial support for the summer institute through the sponsoring institution of higher education, and the loan of business personnel to contribute to the faculty of the summer institute. While cooperation is encouraged, it is recognized that not all institutions of higher education have access to private sector funding, equipment or personnel.

Research

H.R. 1310 authorizes $5 million to fund investigations of effective methods of instruction and effective education programs in mathematics, science and foreign language, as determined by the Director of the National Institute of Education in consultation with other appropriate Federal agencies. The Secretary of Education may allocate funds to both the National Institute of Education and the Fund for the Improvement of Postsecondary Education to conduct these studies. The Secretary shall determine how the funding shall be allotted to each agency to carry out research projects identified by the Director of the National Insitute of Education under this section.

The Committee intends that funds under this section support research projects to improve mathematics, science and foreign language education. These studies may include research on teaching, thinking, learning, and the instructional uses of computers and other information technologies; the application of research to the development of instructional materials; and teacher education programs by the local and private sector (including publishers and computer program developers). Other projects under this section include studies of school needs and operations, particularly explorations of effective school practices, as they affect elementary and secondary school mathematics and science education, and studies of State and local policies affecting the recruitment, retention and teaching skills, improvement of school mathematics, science and foreign language teachers.

It is essential that all students have opportunities to successfully gain the basic and advanced academic skills needed for further learning and work. All studies supported by this section should be conducted with attention to the need for full participation of women and minorities and other traditionally underrepresented groups in school and college mathematics and science courses. Research can focus on identifying barriers to full participation, effective methods of removing those barriers, and other factors influencing the participation and achievement of racial and ethnic minorities.

PART C—TEACHER INITIATIVE GRANTS

Part C authorizes an open-ended amount for one fiscal year, fiscal 1985, for grants to teachers who have completed training under Parts A or B. With these grants, teachers may initiate projects to improve mathematics, science and technology education, such as purchasing classroom equipment or specialized references

materials; costs of class visits to science museums, computer centers, laboratories and other sites; and costs of bringing lecturers to the classroom. Part C funds are to be distributed to States according to the same formula as Part A.

Definitions

H.R. 1310 also amends the definitions in the National Defense Education Act to conform them with the more recent definitions in the Elementary and Secondary Education Act and the Higher Education Act and to make them applicable to the programs in the Committee bill.

The Committee wishes to note that for purposes of this bill, the term "science" does not include the social sciences.

OVERSIGHT

No findings or recommendations concerning oversight of the programs authorized by this bill have been received by the Committee from the Committee on Government Operations.

COST ESTIMATE

The Congressional Budget Office has provided the following estimates of the costs which will be involved in implementing this legislation. The Committee concurs in these estimates and adopts them in compliance with clause 7 of rule XIII. No cost estimates have been received from any other Federal departments or agencies.

The Congressional Budget Office letter follows:

U.S. CONGRESS,
CONGRESSIONAL BUDGET OFFICE,
Washington, D.C., February 15, 1983.

Hon. CARL D. PERKINS,
Chairman, Committee on Education and Labor,
U.S. House of Representatives,
Washington, D.C.

DEAR MR. CHAIRMAN: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for H.R. 1310, the Emergency Mathematics and Science Education Act and the National Engineering and Science Personnel Act of 1983, as ordered reported from the House Education and Labor Committee, February 10, 1983.

Should the Committee so desire, we would be pleased to provide further details on this estimate.

Sincerely,

ALICE M. RIVLIN, *Director.*

CONGRESSIONAL BUDGET OFFICE—COST ESTIMATE

1. Bill No.: H.R. 1310.

2. Bill title: The Emergency Mathematics and Science Education Act and the National Engineering and Science Personnel Act of 1983.

3. Bill status: As ordered reported from the House Committee on Education and Labor, February 10, 1983.

4. Bill purpose: The main purposes of this bill are: (1) to authorize new grants within the Department of Education to improve elementary, secondary and postsecondary education in mathematics and science, and (2) to authorize matching grant funds within the National Science Foundation (NSF) to train engineering, technical and scientific personnel. This bill is subject to subsequent appropriation action.

5. Estimated cost to the Federal Government:

[By fiscal year, in millions of dollars]

	1984	1985	1986	1987	1988
Title I (Function 500)					
Authorization levels:					
Elementary and secondary education	250	264			
Postsecondary education	50	53			
Minority institutions science improvement		5			
Subtotal authorization	300	322			
Estimated outlays	150	311	161		
Title II (Function 250)					
Engineering and science personnel fund authorization level	100	100	100	100	100
Estimated outlays	10	60	90	100	100
Bill total:					
Authorization levels	400	422	100	100	100
Estimated outlays	160	371	251	100	100

Basis of estimate: It was assumed for purposes of this estimate that the bill would become effective on the first day of fiscal year 1984, and that all sums authorized would be appropriated.

Title I—Emergency Mathematics and Science Education Assistance

Title I is authorized for two years. The authorization levels for the elementary, secondary, and postsecondary grants for fiscal year 1984 are those stated in the bill for the first fiscal year after passage of the Act.

The 1985 level is based on the 1984 specified levels and inflated by projected cost increases for education. The minority institutions' science improvement program is authorized through 1984 at $5 million. This authorization is extended for one year.

Based on conversations with Committee staff, it was assumed that these programs would be appropriated on a current year rather than a forward funding basis. Given the nature of these grants outlays are estimated to be 50 percent the first year and the remainder in the second.

Title II—National Engineering and Science Personnel

The bill authorizes the appropriation of $100 million a year for fiscal years 1984 through 1988. These funds are to be expended by the National Science Foundation through a system of matching

grants to individuals and organizations. The matching funds are to come from other public or private sources, and the total moneys provided under this program for any individual grant may not exceed one-half of the total amount of the grant.

The estimated outlays for Title II of the bill are based on spending patterns experienced by similar NSF grant programs.

6. Estimated cost to State and local governments: Only the elementary and secondary education grants established under Title I of this bill would go specifically to state and local governments. These grants are to be allocated on the basis of demographic data and have no state matching fund requirement. To the extend governments are currently expending funds for the specific purposes of this bill, there could be a substitution of federal dollars for state and local dollars. This substitution, however, would not be significant since small amounts of state and local funds are currently being allocated for these specific science and mathematics programs. The other grant programs authorized by this bill are primarily for individuals, institutions of higher education, and the private sector.

7. Estimate comparison: None.

8. Previous CBO estimate: None.

9. Estimate prepared by: Deborah Kalcevic; Charles Essick.

10. Estimate approved by: James L. Blum, Assistant Director for Budget Analysis.

Inflationary Impact

The Committee estimates that the inflationary impact of this legislation will not be significant. Rather, the programs in this bill will positively affect our national economy by augmenting the supply of skilled technicians and professionals and enhancing our competitiveness in world markets through scientific and technical education.

Section-by-Section Analysis (Title I)

SEC. 101 SHORT TITLE

Title—"The Emergency Mathematics and Science Education Act.

SEC. 102(a) AMENDMENTS TO THE NATIONAL DEFENSE EDUCATION ACT ACT OF 1958

Amends the National Defense Education Act of 1958 by adding a new Title VI. (The following sections are part of this new title.)

Part A

SEC. 601 FINDINGS

The Congress finds it is necessary to improve mathematics and science instruction and teacher training in order to enhance our nation's productivity and meet our national defense needs.

SEC. 602 AUTHORIZATIONS

Authorizes to the Department of Education $250 million for fiscal year 1984 and such sums as necessary for fiscal year 1985 for Part A. Prohibits appropriations for Part A if funding for Chapter 1 of the Education Consolidation and Improvement Act is reduced.

SEC. 603 ALLOCATION OF FUNDS

Distributes funds to the States according to formula. Reserves up to 25% of the State's grants for SEA programs and at least 75% for formula grants to LEAs.

SEC. 604 USE OF FUNDS BY LEAS

Lists the uses of funds at the local level: (1) needs assessment; (2) inservice teacher training; and (3) other programs to improve mathematics and science education.

SEC. 605 USE OF FUNDS BY SEAS

Lists the uses of funds at the State levels: (1) inservice teacher training; (2) 20% of the State share for incentive grants to local educational agencies for joint programs with private businesses and other organizations and agencies; and (3) other activities to improve mathematics and science education.

SEC. 606 SUPPLEMENT NOT SUPPLANT

Stipulates that Part A funds must by used to supplement, not supplant, State and local funds.

SEC. 607 PARTICIPATION REQUIREMENT

Requires State and local educational agencies to ensure the full participation of underrepresented groups including women and minorities, in Part A programs.

SEC. 608 PRIVATE SCHOOL CHILDREN PARTICIPATION

Requires States and local school districts to provide for the participation of private school children and teachers in Part A programs.

SEC. 609 CONTROL OF FUNDS

Specifies that Part A funds must be controlled and administered by a public agency.

SEC. 610 EVALUATION AND DISSEMINATION

Calls for State plans and local applications for Part A funds to contain an evaluation of the programs conducted under this part.

Part B

SEC. 621 FINDINGS

There is a need to encourage college and university students to become mathematics, science and foreign language teachers and to improve the postsecondary instruction of these students in order to strengthen the educational foundation of this Nation. Teachers currently in school systems must have access to programs to upgrade knowledge and teaching skills. Further, research into the problem of mathematics, science and foreign language instruction needs to be conducted, including a study of the extent of shortages, current teaching techniques and methods of improving instruction.

SEC. 622 NATIONAL TEACHING SCHOLARSHIPS

Provides 5,000 scholarships in the first fiscal year and up to 10,000 scholarships in the succeeding year. Scholarships are not to exceed the cost of tuition and fees and are not to last more than two academic years. Scholarships may be used for both undergraduate and graduate education. Nominees must have completed at least two years of undergraduate study and have made a formal

commitment to become teachers. Nominees must have achieved satisfactory academic achievement at their college or university the year previous to their nomination for a National Teaching Scholarship. The recipients' commitment to teach can be discharged at a rate of two years of teaching for one year of scholarship assistance. Consideration of nominees is to be based on merit and an equitable geographic distribution of scholarships. Consideration is also to be given to individuals who have traditionally been unrepresented or underrepresented in these disciplines.

Nominations are made through each State's chief school officer, or appropriate executive officer in each State with responsibility for postsecondary education. The District of Columbia and U.S. territories are also included in the State nomination process. Nominations are proportioned by population.

Nominations from the States are forwarded to the Secretary of Education. The selection committee for National Teaching Scholarships is made up of eight public or private sector representatives and five Federal members.

Provision is made so that other Federal student assistance programs are not offset by the scholarships, but the total package may not exceed the cost of attendance.

Up to 30 percent of scholarship funds may be reserved by the Secretary of Education for individuals currently teaching to use for one year of study at an institution of higher education. Awards to current teachers may not exceed $5,000.

In nominating individuals for the National Teaching Scholarship, a chief State school officer may certify other State needs in the field of elementary and secondary teaching other than mathematics, science and foreign language, and nominate individuals who are concentrating in those fields.

SEC. 623 POSTSECONDARY MATHEMATICS, SCIENCE AND FOREIGN LANGUAGE IMPROVEMENT

Provides for competitive, institutional grants for postsecondary mathematics, science and foreign language curriculum improvement and faculty development at the undergraduate level. Development programs are to be focused on academic departments of mathematics, science and foreign language in cooperation with the department or school of education at the same institution. Twenty five percent of funds in this section are reserved for HEA Title III institutions, those serving a high proportion of low income students.

SEC. 624 SUMMER INSTITUTES

Provides competitive grants to institutions of higher education to conduct summer institutes and workshops for certified teachers and supervisors to improve knowledge of mathematics, science and foreign language as well as instructional skills. Summer institutes must meet or exceed academic standards of the host institution.

Where appropriate, coordination between the institution of higher education and business resources should be encouraged.

Upon the request of a State education agency, the Secretary of Education may make grants to other public teacher training agencies, other than institutions of higher education, which have been established by the State education agency for inservice and

summer institute training, if the programs have been established prior to January 1, 1983.

SEC. 625 RESEARCH

Provides for the National Institute of Education to direct research programs into effective instructional methods and educational programs in mathematics, science and foreign languages. In the determination of research studies, the Director of the National Institute of Education shall consult with other appropriate Federal agencies. Funds are to be appropriated to the Department of Education to be used by NIE and the Fund for the Improvement of Postsecondary Education.

Five million dollars is authorized for fiscals year 1984 and 1985 in this section.

SEC. 626 LIMITATION

Limits the total appropriation for Part B to $50 million for fiscal year 1984, with the following apportionment of these funds: not less than 40% of the appropriation for scholarships; not less than 15% for program improvement; and not less than 35% for summer institutes.

Part C

SEC. 641 AUTHORIZATION

Authorizes such sums as necessary for fiscal year 1985 for teacher initiative grants.

SEC. 642 ALLOCATIONS

Distributes teacher initiative grant funds to States according to the Part A formula.

SEC. 643 USES OF FUNDS

Spells out uses of Part C funds for teacher-initiated projects to improve mathematics and science.

SEC. 102(b) DEFINITIONS

Amends Sec. 103 of the National Defense Education Act to conform the definitions to those under the Elementary and Secondary Education Act and the Higher Education Act and to make those definitions applicable to Title I of this bill.

SEC. 103 MINORITY INSTITUTIONS SCIENCE IMPROVEMENT

Extends the Minority Institutions Science Improvement Program authorized by section 406A of the General Education Provisions Act through fiscal years 1985, at a level of $5 million per year.

Changes in Existing Law Made by the Bill, As Reported

In compliance with clause 3 of Rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman):

NATIONAL DEFENSE EDUCATION ACT

TITLE I—GENERAL PROVISIONS

. . . . . .

[DEFINITIONS

[SEC. 103. As used in this Act—

[(a) The term "State" means a State, Puerto Rico, the District of Columbia, the Canal Zone, Guam, American Samoa, the Virgin Islands, and, for the purposes of titles II, III, and V, the Trust Territory of the Pacific Islands, except that as used in sections 302 and 502, such term does not include Puerto Rico, the Canal Zone, Guam, American Samoa, the Virgin Islands, or the Trust Territory of the Pacific Islands.

[(b) The term "institution of higher education" means an educational institution in any State which (1) admits as regular students only persons having a certificate of graduation from a school providing secondary education, or the recognized equivalent of such certificate, (2) is legally authorized within such State to provide a program of education beyond secondary education, (3) provides an educational program for which it awards a bachelor's degree or provides not less than a two-year program which is acceptable for full credit toward such a degree, (4) is a public or other nonprofit institution, and (5) is accredited by a nationally recognized accrediting agency or association approved by the Commissioner for this purpose or, if not so accredited, (A) is an institution with respect to which the Commissioner has determined that there is satisfactory assurance, considering the resources available to the institution, the period of time, if any, during which it has operated, the effort it is making to meet accreditation standards, and the purpose for which this determination is being made, the institution will meet the accreditation standards of such an agency or association within a reasonable time, or (B) is an institution whose credits are accepted on transfer by not less than three institutions which are so accredited, for credit on the same basis as if transfered from an institution so accredited. For purposes of title II, such term includes any school of nursing as defined in subsection (1) of this section; any proprietary institution of higher education (as defined in section 491(b) of the Higher Education Act of 1965) which includes in its agreement under section 204 of such title such terms and conditions as the Commissioner determines to be necessary to insure that the availability of assistance to students at the school under such title has not, and will not, increase tuition, fees, or other charges to such students; and any school which provides not less than a one-year program of training to prepare students for gainful employment in a recognized occupation and which meets the provisions of clauses (1), (2), (4), and (5). If the Commissioner determines that a particular category of such schools does not meet the requirements of clause (5) (but meets the requirements of clause (4)) because there is no nationally recognized accrediting agency or association qualified to accredit schools in such category, he shall, pending the establishment of such an accrediting agency or associ-

ation, appoint an advisory committee, composed of persons specially qualified to evaluate training provided by schools in such category, which shall (i) prescribe the standards of content, scope, and quality which must be met in order to qualify schools in such category to participate in the student loan program under title II, and (ii) determine whether particular schools not meeting the requirements of clause (5) meet those standards. For purposes of this subsection, the Commissioner shall publish a list of nationally recognized accrediting agencies or associations which he determines to be reliable authority as to the quality of training offered.

[(c) The term "Commissioner" means the Commissioner of Education.

[(d) The term "Secretary" means the Secretary of Health, Education, and Welfare.

[(e) The term "State educational agency" means the State board of education or other agency or officer primarily responsibile for the State supervision of public elementary and secondary schools, or, if there is no such officer or agency, an officer or agency designated by the governor or by State law.

[(f) The term "school-age population" means that part of the population which is between the ages of five and seventeen, both inclusive, and such school-age population for the several States shall be determined by the Commissioner on the basis of the population between such ages for the most recent year for which satisfactory data are available from the Department of Commerce.

[(g) The term "elementary school" means a school which provides elementary education, as determined under State law or, if such school is not in any State, as determined by the Commissioner.

[(h) The term "secondary school" means a school which provides secondary education, as determined under State law or, if such school is not in any State, as determined by the Commissioner, except that it does not include any education provided beyond grade 12. For the purposes of sections 301 through 304, the term "secondary school" may include a public junior college, as determined under State law or, if such school is not in any State, as determined by the Commissioner.

[(i) The term "public" as applied to any school or institution includes a school or institution of any agency of the United States, except that no such school or institution shall be eligible to receive any grant, loan, or other payment under this Act.

[(j) The term "nonprofit", as applied to a school or institution, means a school or institution owned and operated by one or more nonprofit corporations or associations no part of the net earnings of which inures, or may lawfully inure, to the benefit of any private shareholder or individual, and for the purposes of part A of title V, includes a school of any agency of the United States.

[(k) The term "local educational agency" means a board of education or other legally constituted local school authority having administrative control and direction of public elementary or secondary schools in a city, county, township, school district, or political subdivision in a State, or any other public institution or agency having administrative control and direction of a public elementary or secondary school.

[(l) The term "school of nursing" means a public or other nonprofit collegiate or associate degree school of nursing.

[(m) The term "collegiate school of nursing" means a department, division, or other administrative unit in a college or university which provides primarily or exclusively an accredited program of education in professional nursing and allied subjects leading to the degree of bachelor of arts, bachelor of science, bachelor of nursing, or to an equivalent degree, or to a graduate degree in nursing.

[(n) The term "associate degree school of nursing" means a department, division, or other administrative unit in a junior college, community college, college, or university which provides primarily or exclusively an accredited two-year program of education in professional nursing and allied subjects leading to an associate degree in nursing or to an equivalent degree.

[(o) The term "accredited" when applied to any program of nurse education means a program accredited by a recognized body or bodies approved for such purpose by the Commissioner of Education.]

DEFINITIONS

SEC. 103. Except as otherwise provided therein, the following terms are defined for purposes of this Act:

(1) The term "State" means any of the several States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, or the Trust Territory of the Pacific Islands.

(2) The term "institution of higher education" has the same meaning given such term in section 1201(a) of the Higher Education Act of 1965.

(3) The term "Secretary" means the Secretary of Education.

(4) The term "State educational agency" has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

(5) The term "school-age population" means that part of the population which is between the ages of five and seventeen, both inclusive, and such school-age population for the several States shall be determined by the Secretary on the basis of the population between such ages for the most recent year for which satisfactory data are available from the Department of Commerce.

(6) The term "elementary school" has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

(7) The term "secondary school" has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

(8) The term "local educational agency" has the same meaning given such term in section 198 of the Elementary and Secondary Education Act of 1965.

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TITLE VI—EMERGENCY MATHEMATICS AND SCIENCE EDUCATION

PART A—ELEMENTARY AND SECONDARY ASSISTANCE

FINDINGS

SEC. 601. The Congress finds that in order to enhance our Nation's economic productivity and ensure an edequate number of skilled individuals to meet our national defense needs, it is necessary (1) to improve the quality of instruction and levels of student achievement in mathematics and science at the elementary and secondary education levels, and (2) to increase the supply and stregthen the qualifications of teachers of mathematics and science at the elementary and secondary education levels.

AUTHORIZATION OF APPROPRIATIONS TO THE DEPARTMENT OF EDUCATION

SEC. 602. (a) There are authorized to be appropriated to the Department of Education to carry out this part $250,000,000, for fiscal year 1984, and such sums as may be necessary for fiscal year 1985.

(b) No funds are authorized to be appropriated to carry out this part for any fiscal year if the amount appropriated to carry out chapter 1 of the Education Consolidation and Improvement Act of 1981 for such fiscal year does not equal or exceed the amount appropriated to carry out such chapter for the preceding fiscal year.

ALLOCATION OF FUNDS

SEC. 603. (a)(1) From the amount appropriated under section 602 for any fiscal year, the Secretary shall reserve—

(A) one percent for allocations among Guam, the Virgin Islands, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands in proportion to their allocations under chapter 1 of the Education Consolidation and Improvement Act of 1981; and

(B) one-half of one percent for payment to the Secretary of the Interior for use in Bureau of Indian Affairs schools for programs consistent with the purposes of this part.

(2) The remainder of the amount so appropriated (after meeting the requirements of paragraph (1)) shall be allocated among the States (treating the District of Columbia and Puerto Rico as States) as follows:

(A) One-half of such remainder shall be allocated among the States in the same manner as is required by the second sentence of section 302(a)(1) of this Act.

(B) One-half of such remainder shall be allocated to each State an amount which bears the same ratio to that one-half of such remainder as—

(i) the product of the school-age population of such State, multiplied by a fraction equal to (I) the per pupil expenditure amount determined under the second sentence of section 111(a)(2)(A), or under section 111(a)(2)(C), of the Elementary and Secondary Education Act of 1965 with respect to such State, divided by (II) the average per pupil expendi-

ture in the United States as determined under section 198(a)(2) of such Act, bears to

(ii) the sum of such products for all the States.

(b)(1) From the amount allocated to any State pursuant to subsection (a) the State educational agency may reserve not more than 25 percent of such amount for the conduct of State programs, planning, and administration pursuant to section 605.

(2) The remainder of the amount allocated to any State pursuant to subsection (a) which is not reserved under paragraph (1) shall be allocated by the State educational agency among the local educational agencies in that State in proportion to their most recent allocations under chapter 1 of the Education Consolidation and Improvement Act of 1981.

USE OF FUNDS BY LOCAL EDUCATIONAL AGENCIES; APPLICATION

SEC. 604. (a) Funds made available to any local educational agency pursuant to this part shall be used, in accordance with a local application certified to meet the requirements of subsection (c) by the State educational agency—

(1) first, to assess the needs for improvement of mathematics and science education in the school district of that local educational agency, including the needs of traditionally underrepresented groups, to determine methods for meeting those needs, and to provide services to aid school administrators and school board members in assessing those needs;

(2) upon completion of activities under paragraph (1), for (A) in-service training (i) to improve teacher knowledge of and teaching skills in mathematics, science, and their applications, (ii) to train school principals for the supervision of course offerings in mathematics, science, and their applications, and (iii) to recertify teachers of other subjects as mathematics and science teachers; and (B) payment of expenses related to teachers attending (i) State-operated teacher training programs in mathematics and science, including programs under section 605, and (ii) summer institutes funded under section 624 of this title; and

(3) after meeting the needs of teachers in the school district of the local educational agency for the programs described in paragraph (2), for any other activity to modernize, expand, or improve instructional programs in mathematics and science in the school district of that agency.

(b) In meeting the needs of teachers for programs described in paragraph (2) of subsection (a) and in carrying out activities under paragraph (3) of such subsection, local educational agencies shall give thorough consideration to the establishment of such programs and activities in conjunction with other such agencies, the State educational agency, educational service agencies, area vocational education schools, and institutions of higher education. Such agencies are also authorized to establish such programs and activities in conjunction with private business enterprises, museums, libraries, and other public and private organizations and agencies.

(c) The application to the State educational agency required by subsection (a) shall consist of (1) an assurance that the local educational agency will comply with applicable Federal audit require-

ments, and (2) satisfactory information to ensure that the local educational agency will use the funds received hereunder in a manner consistent with the purposes of this part and in accordance with section 607.

(d) All in-service teacher training provided under this section shall be in programs which meet any mandatory State standards for teacher training, retraining, and professional development.

STATE USE OF FUNDS; STATE PLAN

SEC. 605. (a)(1) Funds made available to any State educational agency under section 603(b)(1) shall, in accordance with a State plan certified to meet the requirements of this part (including section 607) by the Secretary, be used (A) for programs described in subsection (b) or (c), or (B) for other programs to meet State priorities for modernizing, expanding, and improving mathematics and science education in the State.

(2) Such programs may be operated directly by such agency or under grants to or contracts with local educational agencies and institutions of higher education. Such funds may be used for programs described in clause (B) or paragraph (1) only after the need in such State for programs described in clause (A) of such paragraph has been met.

(3) Such funds may be made available as grants to local educational agencies in accordance with criteria established by the State educational agency which emphasize assisting school districts with special needs. Such grants may include grants for—

(A) cooperative programs developed by rural school districts to maximize in-service training efforts within rural regions or States, develop mathematics and science curricula that take into consideration the special needs of rural regions or rural States, and facilitate cooperative efforts of rural school districts with institutions of higher education and other public or private nonprofit organizations to enhance service delivery; and

(B) efforts to increase the representation of typically underrepresented groups.

(b)(1) Funds allocated to a State educational agency pursuant to section 603(b)(1) may be used for—

(A) in-service training (i) to improve teacher knowledge of and teaching skills in mathematics, science, and their applications, (ii) to train school principals for the supervision of course offerings in mathematics, science, and their applications, (iii) to recertify teachers of other subjects as mathematics and science teachers;

(B) payment of expenses related to teachers attending summer institutes funded under section 624 of this title.

(2) In carrying out activities under paragrpah (1)(A), the State educational agency shall give thorough consideration to the establishment of such activities in conjunction with local educational agencies, educational service agencies, area vocational education schools, and institutions of higher education.

(c)(1) At least 20 percent of the funds allocated to a State educational agency pursuant to section 603(b)(1) shall be used for making grants to provide not more than one-half the cost of joint programs

to improve mathematics and science education. Such programs shall be operated by local educational agencies in conjunction with private business enterprises, institutions of higher education, museums, libraries, or other public or nonprofit private organizations and agencies. Private sector personnel shall be under the supervision of State certified teachers when instructing students in the school classroom. Such programs may include—

(A) training of teachers in programs operated by the private sector;

(B) use of private sector personnel (i) to donate time in elementary and secondary schools for improvement of mathematics and science education and (ii) to train teachers in mathematics and science;

(C) sharing of equipment and facilities;

(D) on-site mathematics and science instruction at private sector facilities; and

(E) improving the skills of teachers while employed in summer jobs.

(2) Funds available under chapter 2 of the Education Consolidation and Improvement Act of 1981 may be used to meet the other one-half of the cost of a program under this subsection, but no other Federal funds may be used to meet that requirement.

(d) Not more than 12 percent of the funds available under section 603(b)(1) may be used by the State educational agency for the cost of administration of programs under this part.

REQUIREMENT TO SUPPLEMENT NOT SUPPLANT

SEC. 606. A State or local educational agency may use funds received under this part only so as to supplement and, to the extent practicable, increase the level of funds that would, in the absence of funds received under this part, be made available from non-Federal sources for programs and activities assisted under this part.

PARTICIPATION REQUIREMENT

SEC. 607. Each State and local educational agency shall take appropriate steps to ensure equal educational opportunity and the full participation of traditionally underrepresented groups, including women and racial and ethnic minorities, in assessment, planning, in-service training, joint programs, and other programs assisted with funds made available under this part.

PARTICIPATION OF CHILDREN AND TEACHERS FROM PRIVATE SCHOOLS

SEC. 608. (a) To the extent consistent with the number of children in the State or in the school district of each local educational agency who are enrolled in private elementary and secondary schools, such State or agency shall, after consultation with appropriate private school representatives, make provision for including special educational services and arrangements (such as dual enrollment, educational radio and television, and mobile educational services and equipment) in which such children can participate and which meet the requirements of this part. Expenditures for educational services and arrangements pursuant to this subsection for

children in private schools shall be equal (taking into account the number of children to be served and the needs of such children) to expenditures for children enrolled in the public schools of the State or local educational agency.

(b) To the extent consistent with the number of children in the State or in the school district of a local educational agency who are enrolled in private elementary and secondary schools, such State or agency after consultation with appropriate private school representatives shall make provision for including teachers from such schools in programs and activities conducted with funds available under this part. Expenditures for such teachers shall be equal (taking into account the number of children served by such private schools) to expenditures for teachers in the public shcools of the State or local educational agency.

(c) If by reason of any provision of law a State or local education agency is prohibited from providing for the participation of children or teachers from private schools as required by subsections (a) and (b), or if the Sceretary determines that a State or local educational agency has substantially failed or is unwilling to provide for such participation on an equitable basis, the Secretary shall waive such requirements and shall arrange for the provision of services to such children or teachers which shall be subject to the requirements of this section. Such waivers shall be subject to consultation, withholding, notice, and judicial review requirements in accordance with sections 557(b) (3) and (4) of the Education Consolidation and Improvement Act of 1981.

CONTROL OF FUNDS

SEC. 609. A State or local educational agency may receive funds under this part only if control of such funds, and title to property derived from such funds, is in a public agency, and only if a public agency will administer such funds and property.

EVALUATION AND DISSEMINATION

SEC. 610. (a) Each State plan and local educational agency application under this part for fiscal 1985 or any succeeding fiscal year shall contain an evaluation of the programs conducted under this part. Such report shall include (1) a description of the needs determined to exist for inservice teacher training as described in section 604(a)(2); (2) the extent to which training provided under this part during the preceding year has met that need; and (3) a specific list of the expenditures made.

(b) The Secretary shall utilize the national diffusion network operated under chapter 2 of the Education Consolidation and Improvement Act of 1981 to disseminate information concerning particularly successful programs under this part to other State and local educational agencies.

PART B—POSTSECONDARY ASSISTANCE

FINDINGS

SEC. 621. (a) The Congress finds that it is necessary (1) to improve the educational foundations of American citizens in order to im-

prove the Nation's economic productivity, (2) to encourage students in postsecondary education to pursue teaching careers in mathematics, science, and foreign language, and (3) to improve the quality of instruction in colleges of teacher education.

(b) The Congress declares that it is therefore necessary (1) to increase the number and quality of postsecondary students entering careers in teaching, (2) to improve the quality of instruction for future teachers of mathematics, science, and foreign language, (3) to provide enriched opportunities for currently employed teachers, and (4) to evaluate (A) current teaching techniques, including techological improvements in classroom equipment and instructional methods, and (B) methods of improving instruction.

NATIONAL TEACHING SCHOLARSHIPS

SEC. 622. (a)(1) Sums available for the purpose of this section shall be used to award national teaching scholarships in accordance with this section to not more than 5,000 individuals for fiscal year 1984, and to not more than 10,000 individuals for fiscal year 1985. Such scholarships may not exceed an amount equal to the tuition and fee expenses of any recipient for two academic years (of undergraduate or graduate education) and may be paid only upon proof of satisfactory achievement in the preceding academic year.

(2) The Secretary of Education may reserve up to 30 percent of the sums available for national teaching scholarships to make awards to individuals who are currently teachers for one year of study at an institution of higher education. Such awards shall not exceed $5,000 to cover the cost of attendance at such institution and related expenses.

(b) Each chief State school officer or appropriate State officer responsible for postsecondary education may provide to the Secretary of Education the names and qualifications of a number of individuals who are qualified to receive national teaching scholarships which does not exceed the product of the number of Members of Congress from that State, multiplied by twenty. The chief school officers of the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa, the Northern Mariana Islands, and the Trust Territory of the Pacific Islands may each provide to the Secretary the name and qualifications of not more than fifty such individuals. Such nominations shall be supported by suitable academic credentials and recommendations, and small include a personal statement by the individual expressing a commitment to pursue a career in teaching.

(c)(1) National teaching scholars shall be selected by a committee composed of the Librarian of Congress (acting as chairman), the Secretary of Education, the Director of the Office of Science and Technology Policy, the Director of the National Science Foundation, the Administrator of the National Aeronautics and Space Administration, four individuals appointed by the Speaker of the House of Representatives, and four individuals appointed by the majority leader of the Senate. The individuals appointed by the Speaker and the Majority Leader shall be individuals (A) who are prominent in public or private elementary, secondary, or postsecondary education, such as teachers, professors, administrators, or officials, (B) who are

in private business enterprises and who have a thorough understanding of the requirements for educated employees of business, or (C) who are members of the public, including parents of students and students.

(2) Selections of national teaching scholars shall be made in accordance with regulations prescribed by the Secretary of Education after consultation with the Librarian of Congress, the Director of the National Science Foundation, and the Director of the Office of Science and Technology Policy. Individuals shall be selected on the basis of merit and shall be pursuing a course of instruction in science, mathematics, foreign language, or other course of study identified by the chief State school officer of the pertinent State as having a critical shortage of qualified teachers. The committee shall ensure that the individuals so selected include individuals who are unrepresented or underrepresented in the respective disciplines. The committee shall also asssure appropriate geographic distribution of national teaching scholarships.

(d) To be eligible for selection as a national teaching scholar, an individual shall have completed the equivalent of at least two years toward a baccalaureate degree and shall have formally expressed the intention to teach elementary or secondary school mathematics, science, foreign language, or other appropriate subject for at least two years for each year for which assistance is received under this section.

(e) Each national teaching scholar shall be obligated to teach for two years for each year of scholarship assistance reviewed, or to repay the total amount of the scholarship, plus interest at a rate prescribed by the Secretary of Education.

(f) Notwithstanding the provisions of section 428(a)(2)(B) through (F) and section 482(a)(1) and (2) of the Higher Education Act of 1965, scholarship funds awarded pursuant to subsection (a) shall not be considered in determining eligibility for student assistance under title IV of such Act, but the sum of student assistance received under such title and a national teaching scholarship shall not exceed the cost of attendance (as such term is defined in section 482(d) of such Act).

POSTSECONDARY MATHEMATICS, SCIENCE, AND FOREIGN LANGUAGE IMPROVEMENT

SEC. 623. (a) Funds available for this section for fiscal year 1984 or 1985 shall be made available by the Secretary of Education for competitive grants to institutions of higher education for undergraduate mathematics, science, and foreign language curriculum improvement and faculty development, in consultation with the school or department of education at that institution. Such programs shall be directed to improving instruction in mathematics, science, and foreign languages for degree and nondegree students who have or who are pursuing teaching certificates.

(b) Twenty-five percent of the funds available pursuant to subsection (a) for fiscal year 1984 or 1985 shall be made available by the Secretary for programs described in such subsection to institutions of higher education which are eligible for assistance under title III of the Higher Education Act of 1965.

SUMMER INSTITUTES

SEC. 624. From the funds available for this section for fiscal year 1984 or 1985, the Secretary of Education shall make grants to institutions of higher education to support summer institutes and workshops for supervisors and certified teachers in elementary and secondary schools to improve the knowledge and skills of such teachers in the areas of mathematics, science, and foreign language, and to improve their instructional skills. Such institutes may, to the extent possible, involve the cooperation of advanced technology firms and other private industries which are able to supply assistance in the teaching of mathematics and science. Such institutes may also be conducted in such other areas as determined by the Secretary. Upon request of the State educational agency, the Secretary may make grants to other public teacher training agencies as established by the State educational agency prior to January 1, 1983.

INVESTIGATIONS OF EFFECTIVE EDUCATIONAL METHODS AND PROGRAMS

SEC. 625. (a) The Director of the National Institute of Education, in consultation with appropriate Federal agencies, shall conduct investigations of effective methods of instruction, and effective educational programs, in mathematics, science, and foreign language (including technical literacy and methods to secure full participation of women and racial and ethnic minorities). Such studies may include—

(1) teaching and learning research in mathematics, science, and foreign languages and on the instructional uses of information technologies;

(2) application of teaching and learning research to the local and private sector development of instructional materials, and to the improvement of teacher training programs;

(3) secondary school operations as they affect student learning in mathematics, science, and foreign languages; and

(4) analysis of local and institutional policies enhancing or inhibiting the recruitment, retention, and improvement of mathematics, science, and foreign languages faculties.

(b) There are authorized to be appropriated to the Department of Education and made available to the National Institute of Education and the Fund for the Improvement of Postsecondary Education to carry out this section not more than $5,000,000 for each of the fiscal years 1984 and 1985.

LIMITATION

SEC. 626. Notwithstanding any other provision of this part, the total amount which may be appropriated pursuant to this part for fiscal year 1984 shall not exceed $50,000,000, of which not less than—

(1) 40 percent shall be available to carry out section 622; and

(2) 15 percent shall be available to carry out section 623; and

(3) 35 percent shall be available to carry out section 624.

PART C—TEACHER INITIATIVE GRANTS

AUTHORIZATION OF APPROPRIATIONS TO THE DEPARTMENT OF EDUCATION

SEC. 641. There are authorized to be appropriated to the Department of Education to carry out this part such sums as may be necessary for fiscal year 1985.

ALLOCATION OF APPROPRIATIONS

SEC. 642. The amount appropriated pursuant to section 651 for any fiscal year shall be allocated among the States in the same manner as is required by section 603(a) of this title.

USE OF FUNDS

SEC. 643. (a) Funds made available to any State pursuant to this part shall be used to make grants to teachers, who have completed inservice or other training under parts A or B of this title, for teacher initiated projects to improve mathematics, science, and technology education. Such uses may include—

(1) purchase of equipment for a specific classroom project or demonstration;

(2) purchase of specialized reference materials;

(3) transportation and other costs of participation for class visits to science museums, computer centers, laboratories, or institutions involved in research and development; and

(4) underwriting the cost of bringing special equipment or lecturers to the classroom or school for student and faculty enrichment.

(b) From the amount available to any State, the State educational agency may reserve not more than one percent of such amount for the conduct of State administration and activities to assist teachers in formulating programs eligible for grants under this part.

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SECTION 406A OF THE GENERAL EDUCATION PROVISIONS ACT

[AUTHORIZATION OF APPROPRIATIONS FOR SCIENCE EDUCATION PROGRAMS

[SEC. 406A. There is authorized to be appropriated to the Secretary of Education for fiscal year 1981—

[(1) $2,500,000 for the purpose of carrying out the Pre-College Science Teacher Training program, and

[(2) $5,000,000 for the purpose of carrying out the Minority Institutions Science Improvement program

transferred to the Secretary from the National Science Foundation by section 304 of the Department of Education Organization Act.]

AUTHORIZATION OF APPROPRIATIONS FOR SCIENCE IMPROVEMENT PROGRAM

SEC. 406A. There are authorized to be appropriated $5,000,000 for each of the fiscal years 1984 and 1985 for the purpose of carrying out the Minority Institutions Science Improvement program transferred to the Secretary from the National Science Foundation by section 304 of the Department of Education Organization Act.

ADDITIONAL VIEWS ON FOREIGN LANGUAGE—H.R. 1310

While we support the purpose of part B, Title I of H.R. 1310 to train, re-train, and upgrade skills and knowledge of math and science teachers, we object to the inclusion of teachers of foreign languages as eligible individuals under part B of the bill.

Part B would permit foreign language teachers, or others interested in becoming foreign language teachers, to compete for National Teaching Scholarships and to attend summer institutes. Part B would also allow institutions of higher education (IHEs) to receive funds under section 623 for curriculum improvement and faculty development in foreign languages.

H.R. 1310 is designed to address the shortage of math and science teachers in our elementary and secondary schools. The bill has been carefully drafted so as to focus funds on teacher training in math and science to the greatest extent possible. With the small amount of money provided for in this bill, it is imperative that it be focused and well targeted. To allow foreign language teachers to compete for program services under this bill really will not help them, and it will mean hurting math and science teachers. The fifty million dollar authorization provided in part B is just enough to meet the needs of math and science teachers; it could never satisfy the needs of math, science, and foreign language teachers, and to spread it among so many people would mean an ineffective and wasteful program.

In full committee markup on February 8, 1983, an amendment that would have added foreign language teachers to part A was defeated by a recorded vote of 17 to 13. The reason for the defeat of this amendment was that the majority of members wanted to keep Part A focused on math and science and did not want to diffuse Part A dollars by including foreign languages.

While we cannot support the inclusion of foreign languages in this bill, we would like to indicate our support of foreign language training in our classrooms, and of improving our foreign language capability as a Nation. It is hoped that through efforts other than this bill we can improve our country's competency in foreign languages to meet the needs of an increasingly global society.

We oppose the inclusion of foreign language teachers in Part B and would support a floor amendment to delete foreign language from the bill when it is brought to the House for a vote.

BILL GOODLING.
TOM COLEMAN.
MARGE ROUKEMA.
STEVE GUNDERSON.
RON PACKARD.

ADDITIONAL VIEWS ON TEACHER RETRAINING—H.R. 1310

During Committee consideration of H.R. 1310, Rep. Coleman offered an amendment to substitute for the National Teaching Scholarship program a scholarship program based on the Administration's Science and Mathematics Teacher Development Act. That amendment would have focused scholarship money on individuals who could become qualified to teach math or science in one year, which we believe is a better use of the federal money.

The National Teaching Scholarship in H.R. 1310 will provide most of its scholarships to college students. College students receiving scholarships may take up to two years, or even longer on their own following receipt of a scholarship, before reaching the classroom. This delay between receipt of the scholarship and entry into the classroom could have been decreased significantly if the Coleman amendment had been accepted.

A small compromise in this area did occur, however. The set-aside of National Teaching Scholarship funds going to current teachers who need re-training or upgrading in math or science was increased from 20 percent to 30 percent. We are encouraged that a greater emphasis was placed on re-training of current teachers by the Committee, and we continue to support efforts that will return re-trained math or science teachers to the classroom as speedily as possible.

JIM JEFFORDS.
BILL GOODLING.
TOM COLEMAN.
MARGE ROUKEMA.
STEVE GUNDERSON.
RON PACKARD.

ADDITIONAL VIEWS OF CONGRESSWOMAN MARGE ROUKEMA ON H.R. 1310, THE EMERGENCY MATHEMATICS AND SCIENCE EDUCATION ACT

Although I voted to report H.R. 1310, I did so principally because I believe that the full House should have the opportunity to consider the pressing problem of weaknesses in the math and science abilities of our Nation's students.

There is no question that these weaknesses do exist. A recent study conducted by the Educational Commission of the States determined that, during the past decade, the math and science scores for high-achieving students have dropped by 2.5 percent to 4.3 percent among the various age groups. At the same time, there has been a dramatic decline over the same period in the number of teachers trained annually to teach these subjects (77 percent fewer in math, 65 percent in science). Consequently, the number of unqualified math and science teachers in secondary school classrooms has been estimated to be as high as 50 percent. All of this is occurring at a time when the greatest demand for new jobs is in the high-technology industries where math and science skills are a prerequisite.

Realistically, the Federal Government can play a very limited role in addressing this problem. I believe that the decline in quality in math and science education is principally a result of lowering of performance standards at the state and local level for graduation and entry into college. Considerable hope can be drawn from recent reports of actions taken by state universities and state education agencies in upgrading these standards.

The Federal Government's ability to influence the raising of graduation and college-entrance requirements or to help strengthen parental concern for their children's schooling is, at best, minimal. However, there can be an effective Federal role in the area of teacher training, particularly in providing certain incentives for entering the math and science teaching professions. Furthermore, the Federal Government can act as a catalyst to encourage a stronger state and local effort.

I believe that the most effective way for the Federal Government to assist this training effort, given the limited funds available during times of high deficits, is to channel funds through existing training and education programs. Unfortunately, the Committee bill commits the bulk of the funds of instituting an entirely new program which will require the Federal dollars to travel through several layers of bureaucracy before actually resulting in any training. On too many occasions in the past, we have seen similar efforts result in serious delays and a siphoning of funds away from the most essential needs to be addressed. It looks good on paper, but it is hardly ever the most effective use of the taxpayer's money.

Although I have reservations about the manner in which the scholarship program is set forth in Part B of H.R. 1310 (most particularly the inclusion of foreign language training and the establishment of a new federal entity where the awards could just as effectively be determined at the state level), I believe that, to the extent it relies on our existing educational systems for the actual training of math and science teachers, the approach in Part B will be much more cost-effective that than taken in Part A.

In addition, I believe that serious and prompt consideration should be given by the Ways and Means Committee to tax incentives to private, high-technology companies to hire pre-college math and science students during the summer months—thus providing valuable experience as well as extra income for the teachers—and to allow those companies' own employees to teach math and science courses on a part-time basis in local school districts. Both of these concepts have been incorporated in a bill (H.R. 836) which Congressman McCurdy has introduced and which I have cosponsored. I believe that this approach, which would have a direct and immediate impact upon the math and science teacher shortage, should be given early consideration regardless of final action on H.R. 1310.

MARGE ROUKEMA.

DISSENTING VIEWS OF HON. JOHN N. ERLENBORN, HON. LARRY E. CRAIG, AND HON. STEVE BARTLETT

We are opposed to H.R. 1310 on both procedural and substantive grounds. This legislation, originally introduced as H.R. 30, was rushed through the Education and Labor Committee.

We cannot understand why it was necessary to circumvent subcommittee consideration of this legislation. One of the values of subcommittee action is that it provides both the Members and the public an opportunity to review the shape and direction of the legislation in the context of the hearings. Any benefit that might accrue from suggestions made during the hearings or from the reaction of interested parties based on a subcommittee mark-up is completely negated by unnecessarily rushing this legislation through full Committee mark-up. One example of the problems created by this unwarranted haste is that our Members had barely three days to consider an alternative proposal put forward by the Administration. One would think the Committee would at least want the opportunity to evaluate thoroughly a major new initiative by the Administration.

Another consideration is the authorization level contained in H.R. 1310. Before the mark-up ended, the Committee managed to incorporate an additional legislative initiative which has the effect of increasing the proposed spending ceiling from $300 million to $400 million. We think it is the height of irresponsibility for the Committee to create a new $400 million a year spending program in the face of a $200 billion deficit. This authorization level is $350 million more than the Administration has requested.

It is obvious that the Committee has no fear that we might just be throwing money at a problem with the hope that it would simply disappear. That tactic has not worked in the past and we are not convinced that it will be any different this time around.

The elementary and secondary education portion of the bill proposes to fund a wide range of activities ranging from teacher inservice training programs, summer institute expenses, and "for other activities to improve instructional programs in mathematics and science." Given the scope of this legislation we fear that Congress will be raising expectations and making promises that are not likely to be fulfilled and without any certainty that whatever amount is spent will produce the result sought.

The proposed National Teaching Scholarship program provides scholarships to college juniors and seniors and to graduate students based on their intention to teach math, science, or foreign language. It does not appear to matter whether these individuals ever had any prior inclination to enter the field of teaching before applying for the scholarship.

These scholarships would be in addition to other federal aid a student may receive—in other words, the scholarship is to act as

an encouragement to students to enter math, science, or language teaching. The idea of incentives is laudable, but it is questionable that these scholarships will really increase the number of math or science teachers. After receiving the scholarship and finishing college, nothing would prevent the student from accepting a job in private industry and opting to repay the scholarship. Some students may view the scholarship as a new form of federal aid, the only requirements being that they are making satisfactory progress and express an intention to teach math, science, or foreign language.

We also have concerns about the length of time it could take for a scholarship recipient to enter the classroom as a certified teacher from the day he or she receives the scholarship: two years to finish college, at least one year of study for certification, and possibly more for specialized training. There are no requirements in the bill that a scholarship recipient must begin teaching within a set period of time upon receipt of the money; only that the recipient indicate his intent to teach at some point.

We feel a scholarship program focused on current teachers—people who are more certain to teach but who need retraining—is a better use of federal dollars and a surer way of getting math and science teachers into the classroom. For that reason, the proposal submitted by the Administration entitled the Science and Mathematics Teacher Development Act (H.R. 1324) is particularly attractive, and we would support a program similar to this.

We also oppose extending services under Part B to teachers of foreign language. There is a shortage of Federal tax dollars, and we should direct them to the highest priority, not diffuse them.

We urge our colleagues to reject H.R. 1310 in favor of H.R. 1324.

If we are serious about meeting the need to improve our children's knowledge of basic subjects, we ought to write a realistic program designed to achieve that goal. We cannot afford to do otherwise.

JOHN N. ERLENBORN.
LARRY E. CRAIG.
STEVE BARTLETT.

DISSENTING VIEWS ON H.R. 1310 OF MR. BARTLETT

I must strongly dissent from my colleagues and oppose H.R. 1310 as reported. My opposition does not stem from a lack of sensitivity to the very serious problems in mathematics and science education. Rather, I oppose H.R. 1310 because the bill as reported does not focus on the most critical area of the math and science education crisis: the shortage of qualified math and science teachers in the classroom. The bill spends proportionately too much money on tangential problems and shortchanges the *real* need of students: the need to pull more math and science teachers into the classroom as rapidly as possible.

This Congress must begin to restrain Federal spending yet continue to meet its legitimate obligations to promote the public interest. Those dollars in this bill which are spent to address the problems of math and science education should be focused where they can do the most good by correcting the teacher shortage rather than by creating new programs. The programs in H.R. 1310, with the exception of the National Teaching Scholarships, do not directly add to the stock of *new* math and science teachers. H.R. 1310 spends only $20 million (National Teaching Scholarships) out of its $300 million authorization to increase the number of math and science teachers who will be in the classroom in a relatively short time.

Witness after witness before this Committee agreed that the teacher shortage problem is the nexus of the math and science education crisis. It only makes sense, then, it is on this critical problem that we should focus our dollars. As worthy as improvement in LEA, SEA, and postsecondary math and science programs may be, we cannot afford Federal dollars for them in this bill; such expenditures should be postponed until we get the Federal budget under control.

Alternatively, the scholarship proposal advocated and budgeted by the Administration would authorize $50 million, which is $250 million less than H.R. 1310. The Administration bill would focus its $50 million to provide the addition of 10,000 new math and science teachers in the classroom after its first full year of operation. An amendment to include this proposal in H.R. 1310 by Mr. Coleman was unwisely defeated by the Committee after hearing arguments that it was "too limited in scope." It *was* limited—to what Congress can and should do to aid math and science education while exercising restraint of available resources.

I have three additional and specific concerns about H.R. 1310.

First, Section 602 authorizes "such sums as may be necessary for fiscal year 1985." "Such sums" language is an invitation to a lack of fiscal discipline in a program. This Committee should make certain that the programs under its jurisdiction are as perfectly focused and fiscally disciplined as possible. Such discipline ensures

appropriate program implementation as well as fiscal responsibility. Toward this end, H.R. 1310 should either specifically authorize an amount for fiscal year 1985 or grant only a one-year authorization.

Second, I hold a great deal of confidence in local school districts. LEAs are intimately familiar with the needs of their students and should be given the maximum amount of discretion possible in administering programs that involve Federal dollars. School districts are already overburdened with the demands of Federal regulations; future grants of Federal money should not carry with them strings to further tie school districts' hands. Although I do not believe we presently have adequate resources to create new LEA curriculum and teacher development programs, LEAs should figure prominently in directing the administration of such programs in the future.

Third, the permissiveness of Section 604(a)(3) concerns me because our resources are limited and the teacher shortage problem is so severe. This provision would allow LEAs to use funds granted under this bill for non-math and science education purposes if the priorities of Section 604(a) (1), (2), and (3) have been met. LEAs should be encouraged to assess their needs very carefully and not accept more money than can be fully utilized in meeting the priorities established by Section 604. More funds will thus be available for other LEAs to fully meet the math and science needs of their students.

H.R. 1310 exceeds the authorization level appropriate under present budget circumstances, does not focus on the critical need to rapidly bring new math and science teachers into the classroom, and spreads dollars into so many tangential areas as to dilute their effectiveness. Consequently, I oppose H.R. 1310 as reported.

STEVE BARTLETT.

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